Assisted Living Facility and Nursing Home Infection Prevention 2010 Needs Assessment Report

Virginia Department of Health
Division of Surveillance and Investigation
Healthcare-Associated Infections Program
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Executive Summary

Background
Healthcare-associated infections (HAIs) are a public health concern due to their prevalence, morbidity, mortality, and cost. An extensive online needs assessment developed by the Virginia Department of Health (VDH) HAI Program was sent to Virginia assisted living facilities (ALFs) and nursing homes (NHs) for the purpose of describing facility demographics, infection prevention-related policies and training, current HAI surveillance practices, frequency of different types of infections, education and training needs, inter-facility communication, and relationship with the health department and the licensing agency.

ALFs and NHs: Different models of care
It is acknowledged that ALFs and NHs have different purposes, provide different services, have residents with varying levels of medical complexity, and are licensed and regulated separately. Because ALFs are centered around a social model and NHs are centered around a medical model, it was important to analyze the responses individually and to identify the different infection prevention practices and needs in each type of setting. Although both ALFs and NHs completed the same needs assessment, there was no expectation that the responses of the two types of facilities would be similar on all areas assessed.

Methods and Limitations
The needs assessment was disseminated electronically to NHs and ALFs in September 2010. Results reported for ALFs were from facilities that were not part of a long-term care community setting that includes a nursing home. Twenty responding facilities had both assisted living and nursing home levels of care and were analyzed with the NH responses. Because the needs assessment's questions did not differentiate responses between the different levels of care, some of the results in the NH section may also reflect the assisted living level of care within the community. The response rates of 11% for assisted living facilities and 34% for nursing homes greatly limit the ability to generalize the findings to all Virginia ALF and NH facilities in these settings. Additionally, it must be taken into consideration that some of the questions may have been misinterpreted or answered incorrectly. Although there were limitations, the needs assessment offered a deep glimpse into the infection prevention educational needs and challenges in ALFs and NHs, creating an opportunity for the VDH HAI Program to develop a training curriculum and resources to address those needs.

Demographics and clinical services able to be provided
ALFs: The majority of ALFs identified themselves as for-profit and as independently or privately owned. Nearly all ALFs were able to provide blood glucose monitoring services and the majority of ALFs were able to provide wound care via their facility staff or contractual staff.

NHs: The majority of NHs identified themselves as for-profit and as part of a chain or corporation. All NHs were able to provide glucose monitoring, wound care, and 24-hour on-site nursing supervision. Greater than or equal to 90% of facilities were able to provide blood draws, urinary catheter management, and IV infusions for peripheral or central lines.

Facility policies

ALFs: Nearly all ALFs had written policies addressing employee hand hygiene and standard precautions. Policy topics that had room for improvement were transmission-based precautions, blood glucose monitoring, addressing transfer of residents with infections to and from other facilities, and education of vendors/contractual staff and visitors regarding infection risk-reduction behavior.

NHs: Greater than or equal to 90% of facilities had written policies addressing all infection prevention-related topics assessed with the exception of education of vendors or contractual staff regarding infection risk-reduction behavior.

Main point of contact (POC) for infection prevention-related issues

ALFs: The majority of POCs had a nursing degree; most were a licensed practical nurse and some were a registered nurse. Over one-fourth of ALF POCs were a non-clinician.

NHs: The majority of POCs were a registered nurse.

Infection prevention training

ALFs: In approximately half of the ALFs, the POC provided infection prevention trainings in the facility. Facility compliance with providing infection prevention training both *upon employment* and *annually* had room for improvement. Trainings addressing multidrug-resistant organisms and transmission-based precautions were least frequently provided. Respondents indicated that the POC may need the most training in outbreak/cluster identification and management in addition to the transfer of residents with infections to and from other facilities. The top three preferred training formats were online self-study, webinar, and regional one-day meetings.

NHs: In three-fourths of NHs, the POC provided infection prevention trainings in the facility. Facility compliance with providing infection prevention training *upon employment* had room for improvement. Respondents identified that the POC may need the most training in outbreak/cluster identification and in how to educate vendors or contractual staff regarding infection risk-reduction behavior. The top preferred training formats were regional one-day meetings and webinars.

Tracking and recording infection data

ALFs: Non-catheter-associated urinary tract infections, influenza, non-ventilator-associated pneumonia, and norovirus were the most frequently occurring infections. Only about half of ALFs indicated that infection data were tracked and recorded. Of the facilities that tracked and recorded infection data, three-fourths shared the data with facility staff.

NHs: Non-catheter-associated urinary tract infections, pneumonia, methicillin-resistant *Staphylococcus aureus* infections, and catheter-associated urinary tract infections were the most frequently occurring infections reported in NHs. All NHs tracked and recorded infection data, and nearly all NHs shared their infection data with facility staff.

Vaccines

ALFs: Although seasonal influenza immunization was both strongly encouraged for employees and residents, less than one-third of ALFs reported that many or most of the employees received the 2009 influenza vaccine. About three-fourths of ALFs strongly encouraged the pneumococcal vaccine for residents, and about three-fourths of ALFs strongly encouraged the hepatitis vaccine for employees.

NHs: Although seasonal influenza immunization was both strongly encouraged for employees and residents, only about one-half of NHs reported that many or most of the employees received the 2009 influenza vaccine. Nearly all ALFs strongly encouraged the pneumococcal vaccine for residents and the hepatitis B vaccine for employees.

Communication

ALFs and NHs: Nearly three-fourths indicated one or more barriers to communication of infection information between facilities, with the foremost concern being the lack of resident information.

Challenges and Perceptions

ALFs: The top two infection prevention challenges were infection risk-reduction behavior compliance for visitors and providing sufficient infection prevention education and training for staff. Half of respondents perceived HAI prevention as a challenge.

NHs: Nearly 90% of NHs reported one or more infection prevention challenges. The top challenges were employee hand hygiene compliance, environmental cleaning compliance, and infection risk-reduction behavior compliance for visitors.

Conclusions

Although there were some significant differences between ALFs and NHs regarding infection prevention policies and practices, both facility types have infection prevention needs that can be addressed in part through trainings and the provision of resources customized for the long-term care setting.

To address the infection prevention POC educational needs identified in this assessment, the VDH HAI Program collaborated with its long-term care partners to develop a training curriculum and methodology for implementing a set of trainings for the ALF and NH audiences. Trainings were held in six locations throughout the state during the summer and fall of 2011, and an accompanying toolkit of resources was shared with facilities. Most were two days in length with the first day targeted for assisted living and the second day targeted to the nursing home setting. In response to the interest of nursing homes in addressing urinary tract infections (UTIs) during the trainings, an infection prevention collaborative was formed in the Eastern region of the state at the end of 2011. An additional toolkit of educational materials specific to UTI prevention and management was developed and distributed during this project. All resources from both the general infection prevention toolkit and the UTI toolkit are available on the VDH HAI website (http://www.vdh.virginia.gov/epidemiology/surveillance/hai/).

Background

Definitions

Long-term care facilities (LTCFs) may be defined as institutions that provide healthcare to people who are unable to manage independently in the community (Smith et al. 2008). This care may represent custodial or chronic care management or short-term rehabilitative services (CDC 2010). The two types of LTCFs addressed in this report are assisted living facilities (ALFs) and nursing homes (NHs). In 2008, nearly one million Americans resided in ALFs and approximately 3.2 million lived in United States nursing homes (NHs) and skilled nursing facilities participating in the Medicare and Medicaid programs (CDC 2010). The estimated number of Virginia nursing home residents in 2010 was 28,429 (The Henry J. Kaiser Family Foundation). There is no such estimate for ALFs. At the time of the needs assessment, there were 257 nursing homes and 561 assisted living facilities in Virginia.

Assisted living facilities are non-medical residential settings that provide or coordinate personal and health care services, 24-hour supervision, and assistance for the care of four or more adults who are aged, infirm or disabled (Virginia Department of Social Services). Assisted living facilities vary in the range of services they provide from extremely limited services, such as offering one meal a day, to comprehensive services that can accommodate residents with more complex medical needs (AHRQ 2006). In Virginia, ALFs are regulated and licensed by the Virginia Department of Social Services (DSS) Division of Licensing Programs (DOLP).

A nursing home is a facility in which the primary function is the provision, on a continuing basis, of nursing services and health-related services for the treatment and inpatient care of two or more non-related individuals (Code of Virginia § 32.1-123). In Virginia, nursing homes are regulated and licensed by the Virginia Department of Health (VDH) Office of Licensure and Certification (OLC).

In recent years, the acuity of illness of both nursing home residents and ALF residents has increased (Smith et al. 2008). The growing complexity of care being delivered in LTCFs has led to increased recognition of the need for improved infection control and prevention of healthcare-associated infections in LTCFs over the last two decades.

Healthcare-Associated Infections: Burden in Long-Term Care

Healthcare-associated infections (HAIs), previously known as nosocomial infections, are a public health concern due to their prevalence, morbidity, mortality, and cost. Due to the strong, standardized surveillance practices in acute care, these negative consequences of HAIs have been quantified. In 2002, an estimated 1.7 million infections occurred in U.S. hospitals, which were associated with approximately 99,000 deaths (Klevens et al. 2007). Each year, the excess direct medical healthcare costs of HAIs to United States hospitals is estimated to range between $28 and $45 billion (Scott 2009). These statistics do not include long-term care facilities; however, Strausbaugh and Joseph (2000) estimated that the burden in LTCFs is similar (1.6 to 3.8 million infections each year). While there are not robust national or state-specific

surveillance data allowing for a current estimate of HAIs or associated costs in long-term care, it is clear that LTCFs, many of whom have residents who are vulnerable to infection due to physical, psychological, or environmental factors, should be engaged in HAI prevention.

Health Department Involvement with Infection Prevention

Local health departments have built relationships with long-term care facilities in their communities by routinely receiving communicable disease reports, consulting on outbreaks and giving infection prevention guidance, and helping provide education, resources, and training, especially during influenza season. While only nursing homes are required to report diseases and conditions from the Virginia list of reportable diseases, both ALFs and NHs are required to contact the local health department when they suspect an outbreak may be occurring. From 2007 to 2011, over 800 outbreaks were reported by ALFs and NHs, representing over half of all outbreaks in the state during this time period.

Several hepatitis B outbreaks have occurred in assisted living facilities in recent years, which led VDH to conduct a survey in 2006 to characterize existing infection control and blood glucose monitoring practices, promote safe practices, assist with compliance with the Occupational Health and Safety Administration (OSHA) Bloodborne Pathogens Standard, and identify training and policy needs in assisted living (Patel, White-Comstock, Woolard, and Perz 2009). Since then, four hepatitis B outbreaks occurred in assisted living settings between 2009 and 2011, demonstrating the ongoing challenge of implementing infection prevention and control measures during assisted blood glucose monitoring (CDC 2012).

Building a Formal Healthcare-Associated Infections Program

In fall 2009, the VDH Division of Surveillance and Investigation received American Recovery and Reinvestment Act (ARRA) funds for HAI prevention activities. These funds were to be used to increase state health department capacity by developing an HAI program, enhancing HAI surveillance, and building HAI prevention collaboratives, including providing targeted education.

The first year of the VDH HAI Program focused on infection prevention in acute care hospitals. A needs assessment was conducted in 2010 among acute care infection preventionists, quality improvement staff, and administrators to describe HAI surveillance efforts, educational needs, and organizational culture. The majority of acute care infection preventionists were already conducting extensive HAI surveillance in their facilities, using standardized definitions, and meeting federal and state requirements and recommendations for infection prevention. While the VDH HAI Program identified specific areas to assist acute care hospitals with education and continues to offer technical assistance and training, it became apparent that there were other types of facilities that were in greater need for infection prevention support in the Commonwealth. This included, but was not limited to, long-term care facilities. Guided by Virginia infection preventionists and a newly formed Long-Term Care Advisory Committee, it was evident that if the HAI Program was going to try to support LTCFs, another needs

assessment tailored to LTCFs would be essential in discovering gaps for the HAI Program to address.

Training

Training is an important part of building the infection prevention knowledge base within a facility and assuring that staff are up-to-date on current policies and procedures to satisfy licensure requirements and provide excellent care for their residents. In developing this needs assessment, it was important to capture information on infection prevention topics that are required by federal and/or state regulation or legislation. The HAI Program wanted to use the identified educational needs to provide training opportunities and materials for the infection prevention contacts in long-term care facilities and develop sustainable resources for facility staff, residents, and visitors.

General infection prevention training is required upon employment and annually, and is also required for many specific topics. For example, the OSHA Bloodborne Pathogens Standard requires that appropriate training be available to each employee with the potential for occupational exposure to blood or body fluids at no cost to the employee, provided during working hours, and given at the time of initial assignment, at least annually thereafter, and as needed. There should be an accessible copy of the OSHA regulation and an explanation of its contents. The training should include a general explanation of epidemiology and symptoms of bloodborne disease, modes of transmission of bloodborne pathogens, an explanation of personal protective equipment selection, and information on the hepatitis B vaccine. Special attention was paid in the assessment to bloodborne pathogen prevention and blood glucose monitoring training and policy needs in light of the recent hepatitis B outbreaks that have occurred.

For Virginia ALFs, the Department of Social Services requires a staff orientation within the first seven days of employment and prior to assuming job responsibilities. Infection prevention training should include policies and procedures, relevant laws, and regulations addressing: handwashing techniques, standard precautions, infection risk-reduction behavior, establishing procedures to isolate the infecting organism, linens, medical waste, and pest control.

For Virginia NHs, the VDH Office of Licensure and Certification requires an orientation and annual training commensurate with the employee's function which includes infection prevention topics such as: isolation procedures, handwashing techniques, prohibiting employees with communicable diseases from contact if transmittable, linens and medical waste, pest control, and staff education regarding infection risk-reduction behavior.

Policies

Written infection prevention policies not only are required by law but also form the backbone of a facility's infection prevention program. When a licensing agency or accrediting body visits a facility, compliance and consistency with the facility's own internally written policies are investigated. These policies should be reviewed and updated at least annually, and more often as needed. There are some specific written policies that are required to minimize employee

exposure to blood and body fluids, such as the OSHA Bloodborne Pathogens Exposure Control Plan. This policy should be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks, procedures, and positions. The needs assessment was designed to capture areas where written infection prevention policies were lacking.

Vaccination

Vaccination is another important infection prevention strategy. At the time the needs assessment was implemented, selected vaccinations/proof of immunity were strongly recommended for employees and/or residents of long-term care facilities. In 2009 and 2010, the annual influenza vaccine was strongly recommended for both employees and residents, hepatitis B vaccine/immunity was strongly recommended for staff with potential blood or body fluid exposure, and the pneumonia vaccine was strongly recommended for residents over 65 years of age. State regulations (12VAC5-371-110) require nursing homes to provide or arrange for the administration of a pneumonia vaccination and an annual influenza vaccination according to the most recent recommendations unless the vaccination is contraindicated or the resident declines the vaccination offer.

OSHA requires employers to make the hepatitis B vaccine and vaccination series available to all employees who have occupational exposure and post-exposure evaluation at no cost to the employee. The hepatitis B vaccination shall be made available after the employee has received training and within ten working days of initial assignment. Employers must establish and maintain an accurate record for each employee with occupational exposure to potential bloodborne pathogens, so it is important to document hepatitis B immunity and/or vaccination status in the facility.

Unique Infection Prevention Considerations for the Long-Term Care Setting

While there are extensive infection prevention guidelines and resources for the acute care setting, the same recommendations may not always apply to the LTC setting, which differs from the acute care setting in a number of ways. In acute care, patients usually remain in the facility for a limited period of time, depending on the procedure or condition, and do not spend much time outside of their patient room. In contrast, LTCFs are residential and promote socialization; residents may live in the facility for years and may engage in many communal activities within the facility. In addition, LTC residents tend to be older, on average, than acute care patients. Ninety percent of NH residents are over 65 years of age, and the mean age is over 80 years (Smith et al. 2008). Older adults are at a higher risk of having an impaired immune system due to chronic disease, multiple underlying diseases, malnutrition, dehydration, and/or use of immunosuppressant medication (Smith et al. 2008). In addition, they may be more likely to have cognitive deficits that make compliance with appropriate infection prevention challenging both for the individual and for the staff (Smith et al. 2008). Due to the dearth of infection prevention guidelines and resources for the LTC setting, the VDH HAI Program sought to identify infection prevention gaps and concerns by conducting a needs assessment and using the results to create educational resources and trainings to help address these issues.

Methods

The assessment was designed by the Virginia Department of Health HAI Team with input from the Virginia HAI Long-Term Care (LTC) Task Force and LTC Advisory Committee, which included representation from the Virginia chapter of the Association for Professionals in Infection Control and Epidemiology (APIC-VA), VDH Division of Surveillance and Investigation, VDH Office of Licensure & Certification (OLC), Virginia Assisted Living Association (VALA), Virginia Association of Nonprofit Homes for the Aging (VANHA), Virginia Department of Social Services (VDSS), Virginia Health Care Association (VHCA), and assisted living facility and nursing home providers.

The assessment covered infection prevention-related topics including: facility demographics; services provided; background, training needs, and preferred training formats of the main point of contact for infection prevention; written policies; training provided to staff; surveillance practices; intra-facility and inter-facility communication; vaccination policies; and the relationship with the health department and licensing agency. The majority of the questions were closed-ended and a few were open-ended. Types of closed-ended questions included yes/no, multiple choice, categorical, Likert-scale, numerical, and ordinal. Some questions allowed the respondent to choose more than one answer. Free text fields were often provided for the respondent to specify where "other" was an option. "Do not know" was also a choice in many of the questions. The VDH HAI Program pilot tested the assessment in eight facilities to evaluate how the questions were comprehended by facility staff and subsequently altered the assessment to improve clarity.

SurveyMonkey was used to develop and administer the needs assessment electronically. A link to the assessment was sent via e-mail to each assisted living facility and nursing home where contact information was available from state licensing agencies (VDSS for assisted living and VDH OLC for nursing homes). Of the 561 licensed ALFs, VDSS had e-mail contact information for 531 and directly sent the needs assessment invitation through their listserv. VDH OLC provided contact e-mails for the 257 nursing homes and the HAI Program distributed the link to the needs assessment directly to those facilities. Reminders to participate were sent through the VDSS listserv as well as through the long-term care associations and VDH HAI newsletters. Local and regional health department epidemiologists also sent announcements to facilities in their jurisdiction to encourage completion of the assessment.

The survey was open between September 13, 2010 and October 15, 2010. Once the invitation to the needs assessment was received, respondents could elect to complete the survey electronically or request a paper-based copy to return via mail or facsimile. Almost all respondents (95%) elected to complete the assessment online.

The needs assessment instructed the respondent to answer all questions on behalf of the entire facility, which encompassed all levels of care *except* independent living. In this document, results reported for ALFs are from facilities that are not part of a long-term care community

setting that includes a nursing home [such as a continuing care retirement community (CCRC)]. Because ALFs affiliated with a NH or a CCRC may share infection prevention training resources among the levels of care and the survey did not permit the respondent to distinguish answers between the different levels of care, if an ALF indicated affiliation with a NH or CCRC, it was grouped and analyzed with the NH respondents. If an ALF responded that it did not know if it was part of a CCRC, VDH HAI Program staff classified each facility's affiliation with a CCRC either by calling the facility directly or researching online.

To validate the responses for certain clinical services able to be provided (or not provided), some facilities were called directly. An ALF was contacted if the respondent indicated that its facility staff or contractual staff were able to provide for the management of residents on a ventilator or tracheostomy or if they were able to provide IV infusions using peripheral or central lines. A NH was contacted if the respondent indicated that its facility staff or contractual staff were able to provide for the management of residents on a ventilator or if the facility did *not* provide on-site supervision by a nurse 24 hours a day.

Respondents who indicated "do not know" were included in most analyses, unless otherwise indicated, but were not referenced in this report unless it represented over 10% of the respondents. For the 100% stacked graphs, "do not know" responses were not included in the analysis.

RESULTS

Assisted Living Facilities

NOTE: Results in this section are from facilities that are not part of a long-term care community setting that includes a nursing home [such as a continuing care retirement community (CCRC)].

Facility demographics
The assisted living facility (ALF) response rate was 11% (n=56) of the 531 facilities attempted to be contacted via e-mail. Because not every assisted living facility in Virginia (n=561) had a listed e-mail address with the Department of Social Services, the 56 ALFs that responded accounted for 10% of all ALFs in Virginia. Of the 56 ALF respondents, 64% (n=36) were stand-alone ALF facilities, and 36% (n=20) were affiliated with a nursing home (NH) and/or a continuing care retirement community (CCRC). The analysis in this section focuses on the 36 stand-alone ALF respondents.

While most facilities identified their setting as an assisted living facility, other examples of how facilities referred to themselves included formal adult home, independent living community, residential care, and residential setting.

Sixty-one percent of facilities identified themselves as for-profit, and 31% of the facilities identified themselves as not-for profit.

The majority of facilities were independently or privately owned (69%) and 22% were part of a chain or corporation.

Half of respondents worked in a facility with 54 licensed beds or more, and the average number of licensed beds was 80 (minimum=8 beds, maximum=635 beds). In terms of the current census level at the time of the survey, half of respondents worked in a facility with 48 beds or more (average=67, minimum=6, maximum=565).

Organizations
Of the 25 facilities that were part of other organizations, 52% were affiliated with the Virginia Assisted Living Association (VALA), 40% were affiliated with the Virginia Health Care Association (VHCA), and 20% were affiliated with the Virginia Association of Nonprofit Homes for the Aging (VANHA).

- One facility was a member of Virginia Adult Home Association (VAHA), and one was a member of Virginia Hospital and Healthcare Association (VHHA).
- Other organizations noted included the following: Independent Small Business Organization, the Virginia Adult Home Association (VAHA), and Bon Secours of Virginia.
- Six facilities (24%) were not affiliated with other organizations.

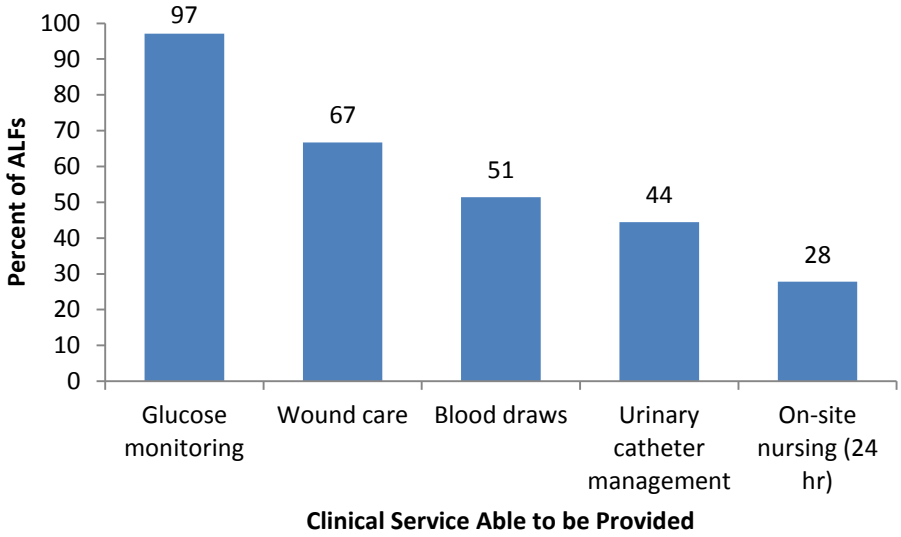
Respondent information
Half of the respondents had been in the facility for at least 5 years (average=7, minimum=0.5, maximum=24).

Facility services provided
Room composition
Rooms provided by number of occupants:

- Nearly all facilities had at least some private rooms available to their residents (91%) while 9% did not provide any private rooms. Twenty-one percent of responding facilities provided only private rooms to their residents.
- Eighty-three percent of responding facilities had at least some two-person semi-private rooms.
- Nearly one-fourth (24%) of the responding facilities had at least some semi-private rooms for more than two people.

Clinical services able to be provided by facility staff and/or contractual staff
Because ALFs and NHs responded to the same needs assessment, ALFs were asked if they were able to provide for the management of residents on a ventilator or with a tracheostomy or if they were able to provide IV infusions using central or peripheral lines. As expected, no ALFs were able to provide these services.

Graph 1: Percent of assisted living facilities (ALFs) with facility staff or contractual staff able to provide selected clinical services by type of service, Virginia, 2010



- Note: These clinical services may be able to be provided by facility staff or contractual staff such as home health. Respondents did not specify what type of staff (facility or contractual) were able to provide the services. Nearly all ALFs provided glucose monitoring services.
- The majority of ALFs provided wound care.

- Approximately half of ALFs provided blood draws and/or management of residents with a urinary catheter.
- Nearly one-third of the responding ALFs provided 24 hour on-site supervision by a nurse.
    - Note: ALF regulations state that there must be 24 hour on-site supervision but does not require that supervision to be provided by a nurse. While it is permitted that ALFs have nurses scheduled 24 hours a day, an ALF is prohibited from admitting or retaining an individual in need of continuous licensed nursing care (22 VAC 40-72-340). In addition, even if an ALF chooses to have a nurse on-site 24 hours a day, the ALF is not permitted to advertise their facility as a "24 hour nursing care" facility (*Code of Virginia* § 18.2-216).

Facility policies

All facilities were aware of the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens (BBP) Exposure Control Standard and nearly all, except for one facility, had either a separate BBP Exposure Control Plan (63%) or its components were included in other policies (34%).

Table 2: Percent of assisted living facilities (ALFs) with written policies addressing infection prevention-related issues, Virginia, 2010

Written policies addressing infection prevention-related issues	Percent of ALFs
Employee hand hygiene	97%
Standard precautions	97%
Employees who become sick with communicable diseases or infections	94%
Handling and disposal of medical waste	94%
Pest control	94%
Use of personal protective equipment	94%
Vaccinations of employees	94%
Handling and processing of linens and other equipment	91%
Reporting requirement for the health department	91%
Vaccinations of residents	91%
Transmission-based precautions	89%
Blood glucose monitoring	82%
Education of visitors regarding infection risk-reduction behavior	79%
Transfer of residents with infections to and from other facilities	74%
Education of vendors or contractual staff regarding infection risk-reduction behavior	58%

- At least 90% of facilities had written policies addressing all of the infection prevention areas included in the table above except educating vendors/contractual staff, transferring residents between facilities, educating visitors, blood glucose monitoring, and transmission-based precautions.
- The education of vendors/contractual staff regarding infection risk-reduction behavior was addressed by a written policy in the lowest percentage of facilities.

Time spent on infection prevention activities
Approximately two-thirds (68%) of respondents reported that staff spent an average of 1 to 10 hours per week on infection prevention-related activities, which could include but were not limited to: tracking infections, educating staff, developing infection prevention policies, and monitoring hand hygiene. Sixteen percent of ALFs spent an average of 11-20 hours per week on infection prevention activities, 6% spent no time, and 3% spent more than 20 hours per week.

Main point of contact for infection prevention-related issues
The main point of contact (POC) for infection prevention-related issues was defined as the staff member who had the most responsibility for infection prevention in the facility.

Eighty-six percent of respondents reported themselves as the facility infection prevention POC.

The majority of POCs had a nursing degree, but a variety of levels of POC professional training was reported by the responding facilities.

- One-third reported the POC was a licensed practical nurse (LPN) and one-fourth reported the POC was a registered nurse (RN). Eleven percent reported the POC was a nursing assistant (CNA/NA).
- Over one-fourth (28%) of the facilities had a non-clinician as the POC for infection prevention-related issues, of which the majority were administrators.
- One facility had no POC for infection prevention-related issues.

Over half of the current POCs (56%) had been overseeing infection prevention-related activities for at least five years, and nearly a quarter (24%) for 2-5 years. Eighteen percent of current POCs had been overseeing these activities for less than two years, half of which had this responsibility for fewer than 6 months.

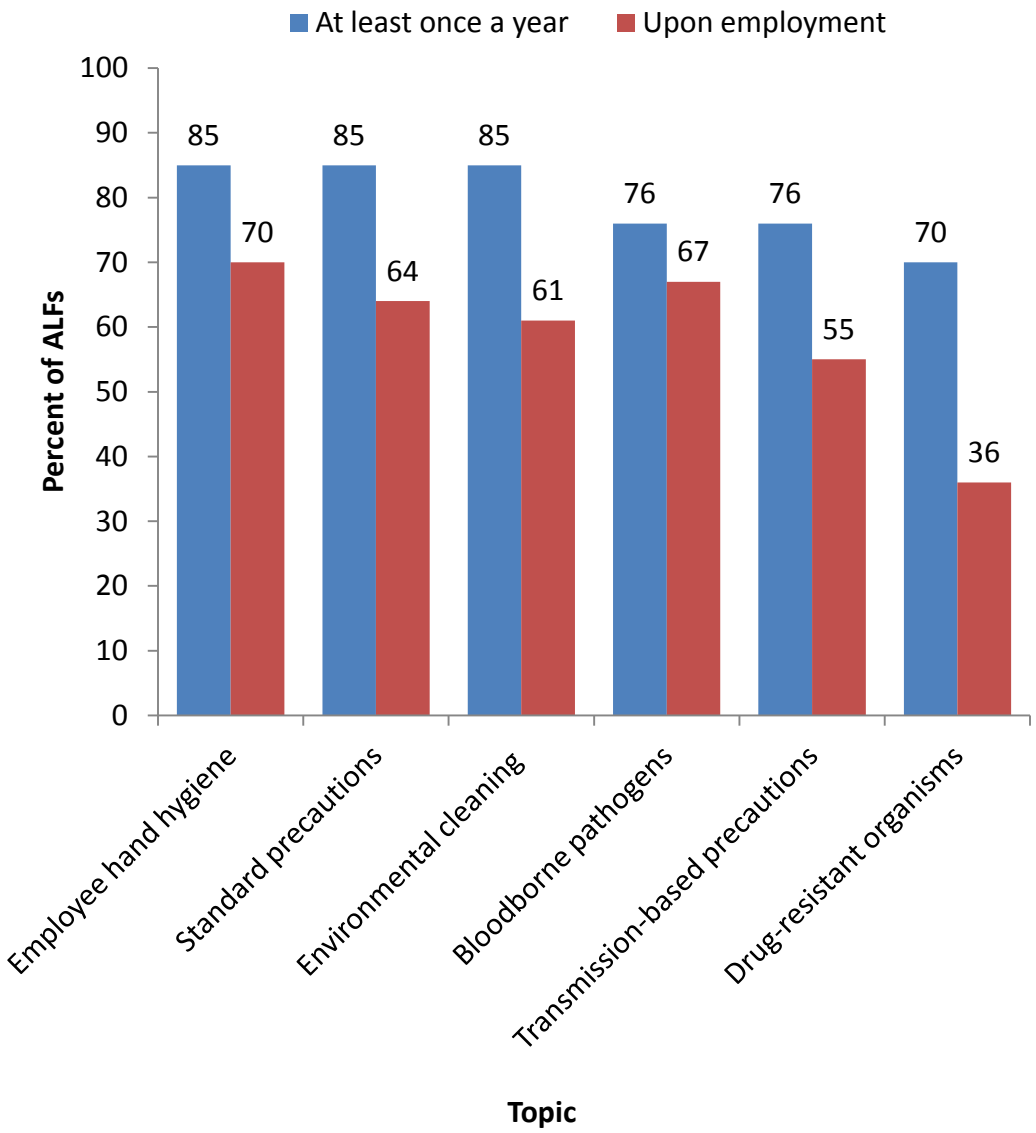
No respondents reported that their POC was a national or state APIC member.

Infection prevention-related training for staff
In approximately half of the responding facilities (55%), the POC provided infection prevention-related trainings. Nearly one-third (30%) of facilities had a facility staff member designated for infection prevention-related trainings that was not the POC, including clinical care directors, department manager, staff nurses, outside services, and corporate trainers. Twelve percent of facilities did not have a designated person who usually provided infection prevention-related trainings.

Agencies/organizations that provided infection prevention-related trainings to ALFs included: Department of Social Services (42%), local health department (27%), VDH Office of Licensure and Certification (21%), state health department (18%), Virginia Health Care Association (18%), Virginia Association of Nonprofit Homes for the Aging (9%), and Virginia Assisted Living Association (6%). Of note, it is unclear how some of the ALFs received training from the VDH Office of Licensure and Certification, which is not the regulatory body for ALFs. In addition,

nearly half of the facilities reported that other organizations provided infection prevention-related trainings of which home health agencies were the most common. Others included local hospitals, the Red Cross, nurses, online training, in-services, first aid instructor, pharmacy nurse, and environmental services.

Graph 2: Percent of assisted living facilities (ALFs) offering infection prevention-related trainings to staff with resident contact by frequency and topic, Virginia, 2010



- No training topics were provided to staff with resident contact by more than 90% of ALFs upon employment or at least once a year.
- For all topics, trainings were provided more commonly at least once a year as compared to upon employment.

- Trainings for multidrug-resistant organisms and transmission-based precautions were least frequently provided upon employment.
- More facilities provided scheduled trainings, such as upon employment or at least once a year, than provided topic-based trainings as needed.

Point of contact infection prevention training needs

Table 3: Percent of assisted living facilities (ALFs) identifying training needs for the facility's main point of contact for infection prevention-related issues, Virginia, 2010

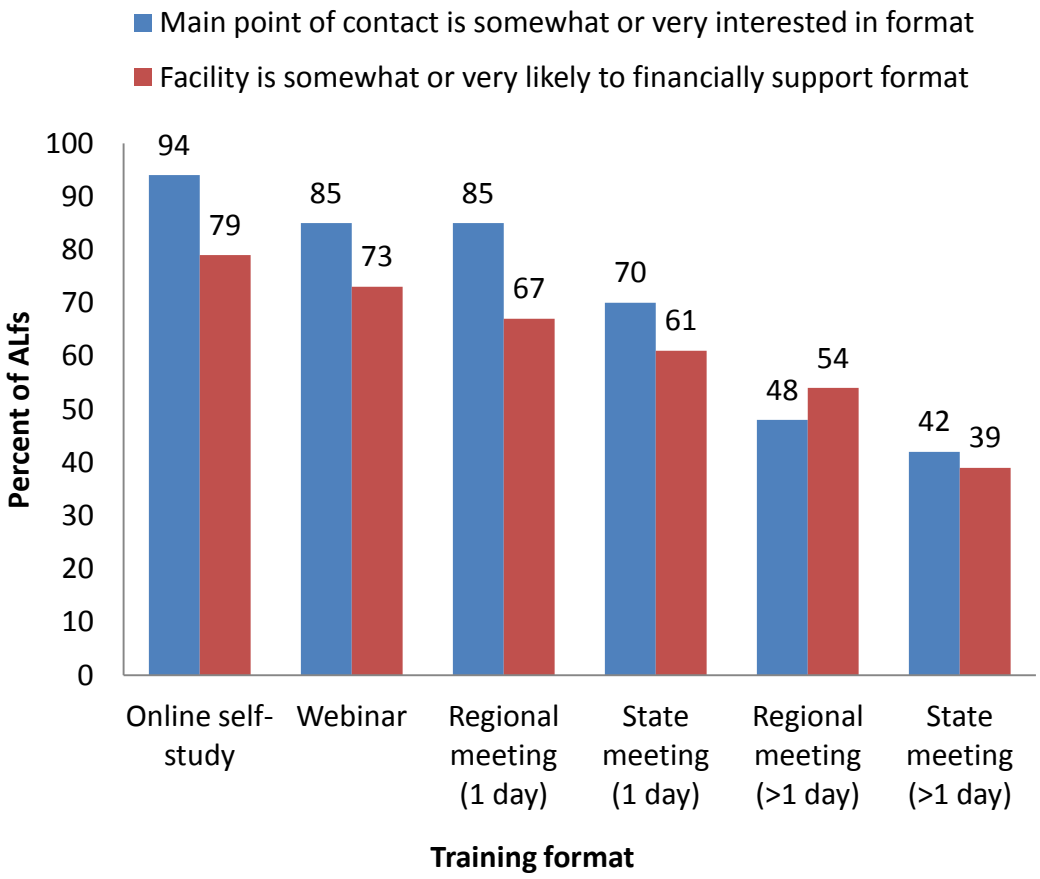
Training needed for the main point of contact for infection-prevention related issues	Percent of ALFs
Outbreak/cluster identification and management	75%
Transfer of residents with infections to and from other facilities	75%
How to educate residents regarding infection risk-reduction behavior	66%
Multidrug-resistant organisms	66%
How to educate vendors or contractual staff regarding infection risk-reduction behavior	63%
How to educate visitors regarding infection risk-reduction behavior	63%
Environmental cleaning and disinfection	63%
Routes of disease transmission	56%
Bloodborne pathogens exposure control policies and procedures	53%
Reporting requirements to the health department	53%
Transmission-based precautions	53%
Blood glucose monitoring practices	50%
Employees who become sick with communicable diseases or infections	50%
Vaccination policies	50%
Diarrheal disease	47%
Handling and processing of linens and other equipment	47%
Reporting requirements to the licensing agency	47%
Standard precautions	47%
Use of personal protective equipment	41%
Handling and disposal of medical waste	41%
Employee hand hygiene	31%

- Three-fourths of the respondents reported that the infection prevention POC needed training on outbreaks and the transfer of residents with infection to and from other facilities.
- The top five training needs were outbreak identification and management, transfer of residents with infections to and from other facilities, how to educate residents and vendors/contractual staff regarding infection risk-reduction behavior, and multidrug-resistant organisms.
- The training topics for the POC that were noted the *least* frequently were employee hand hygiene, personal protective equipment, and waste management.

Training format

Seventy percent of responding facilities thought their POC would be interested or very interested in "train-the-trainer" programs.

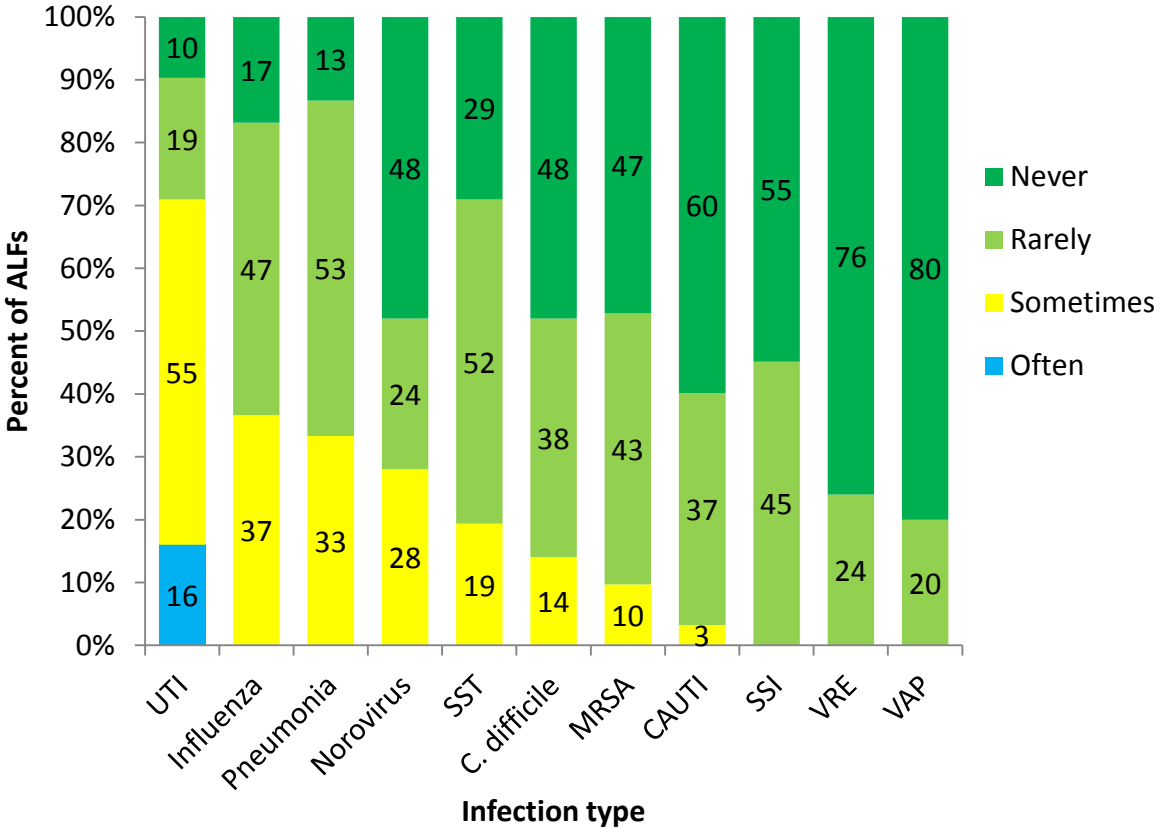
Graph 3: Percent of assisted living facilities (ALFs) reporting interest and likelihood of financial support of training by training format, Virginia, 2010



- The highest percentage of respondents reported that an online self-study module, as compared to other training delivery methods, was of interest to the POC and would be supported financially.
- More than half of the respondents thought their POC would be interested in and supported by the facility to attend infection prevention-related trainings provided through online self-study modules, webinars, or one-day in-person regional or state meetings.
- More facilities were interested in regional trainings than state trainings.
- Multi-day meetings were less likely to be of interest to POCs and less likely to be financially supported by the facility.

Frequency of specific infections

Graph 4: Percent of assisted living facilities (ALFs) reporting infections by frequency category and infection type, Virginia, 2010



UTI = urinary tract infection
Pneumonia does not include ventilator-associated
MRSA = methicillin-resistant *Staphylococcus aureus*
CAUTI = catheter-associated urinary tract infection
C. diff = *Clostridium difficile* infection
SST = skin and soft tissue infection
VRE = vancomycin-resistant *Enterococcus*
SSI = surgical site infection
VAP = ventilator-associated pneumonia

- More than half of the respondents indicated that there has never been a ventilator-associated pneumonia (VAP) infection, vancomycin-resistant *Enterococcus* (VRE) infection, catheter-associated urinary tract infection (CAUTI), or surgical site infection (SSI) in their facility. Norovirus, *Clostridium difficile*, and MRSA were reported as never occurring in nearly half of the responding facilities.
- Non-catheter-associated urinary tract infections (UTIs) were the most common infections reported by ALFs. These were also the only type of infection reported to occur "often" in responding facilities.

A variety of methods were used by responding facilities to identify infections in their residents. In the majority of facilities (87%) residents were observed and referred for medical care and diagnosis. Approximately two-thirds (68%) reviewed healthcare provider notes, 61% reviewed microbiology and/or laboratory reports, 58% used resident, friend or family member reports, and 35% reviewed new antibiotic orders. One facility reported the physician determines if it is an infection.

Tracking and recording infection data

About half (52%) of the respondents indicated that infection data are tracked and recorded in their facility. Of the facilities that tracked data (n=16):

- **Surveillance area:** Nearly all facilities (94%) collected data to track infections in all of the resident units facility-wide.
- **Recording method** (percentages are not mutually exclusive)**:** In order to track and record infection data, three-fourths of the facilities used a spreadsheet or log book and 31% used an electronic database. Two facilities (13%) used both a spreadsheet or log book and an electronic database.
- **Definitions** (percentages are not mutually exclusive)**:** While most facilities (56%) used Centers for Disease Control and Prevention (CDC) definitions to identify infections, nearly one-third (31%) used facility or corporate-developed definitions, nearly one-fifth (19%) used CDC-modified definitions, and no facilities used McGeer criteria. Two facilities reported that they used APIC definitions. Two respondents did not know which definitions their facility used.
- **Rates calculated** (percentages are not mutually exclusive): A rate is number of new cases per population in a given time period.
    - Half of the facilities that tracked and recorded infection data calculated specific infection rates while only one facility calculated device-related infection rates (e.g., catheter-associated urinary tract infections). Nearly one-third of ALFs (31%) did not calculate any infection rates.
    - One facility reported that it shared the number of infections in quality assurance meetings.
- **Reports:** Over half of the facilities (56%) created reports with facility infection data (56%).
- **Sharing data:** Three-fourths of the facilities shared their infection data with facility staff.

Table 4: Percent of assisted living facilities (ALFs) sharing infection data by audience type, Virginia, 2010

Audience type	Percent of ALFs
Leadership (e.g., director of nursing, medical director)	83%
Nursing staff	83%
Physicians	67%
Owners (e.g., Board of Directors)	50%
Unit managers	33%

- Of those facilities that shared data, most did so with facility leadership or nursing staff.
- Half or less than half of ALFs that shared data with facility staff did so with owners or unit managers.
- Some facilities noted that infection data were shared with other internal or external stakeholder groups, which included the health department, facility quality improvement committee, or the corporate office.

- **Routine collection of data in the facilities that track and record infection data**:

Table 5: Percent of assisted living facilities (ALFs) conducting surveillance by infection type, Virginia, 2010

Infection type	Percent of ALFs
Urinary tract infection (UTI)	81%
Influenza	81%
Skin and soft tissue infection (SST)	81%
Norovirus	75%
Clostridium difficile infection	56%
Pneumonia, does not include ventilator-associated	56%
Methicillin-resistant *Staphylococcus aureus* (MRSA)	50%
Catheter-associated urinary tract infection (CAUTI)	44%
Surgical site infection (SSI)	38%
Vancomycin-resistant *Enterococcus* (VRE)	19%
Ventilator-associated pneumonia (VAP)	13%

- At least three-fourths of responding ALFs that tracked infections collected infection data on urinary tract infections, influenza, skin and soft tissue infections, and/or norovirus.
- Half or less than half of the responding ALFs that tracked infections collected data on MRSA, catheter-associated UTIs, surgical site infections, VRE infections, and/or VAP infections.

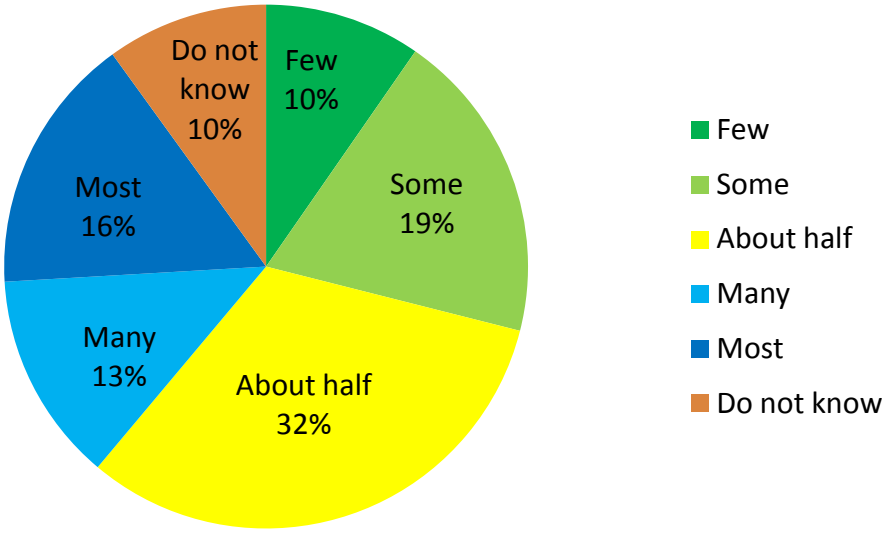
Vaccines

Table 6: Percent of assisted living facilities strongly encouraging vaccinations or proof of immunity and/or keeping immunization records for the selected vaccine-preventable diseases by employee or resident status, Virginia, 2010

Vaccine	Strongly encouraged		Immunization records kept		
	For residents	For employees	For residents	For employees	Neither for residents nor employees
Pneumonia	77%	37%	77%	30%	20%
Seasonal influenza	93%	90%	90%	60%	10%
Hepatitis B	27%	73%	40%	73%	13%

- Seasonal influenza immunization was both strongly encouraged and recorded for employees and residents, although less often recorded for employees.
- Pneumococcal immunization was more often strongly encouraged and recorded for residents than employees while hepatitis B immunization was more often strongly encouraged and recorded for employees than residents.
- Up to one-fifth of ALFs did not keep immunization records for selected diseases.
- Thirteen percent of respondents did not know if the hepatitis B vaccine was encouraged in their facility.

Graph 5: Percent of assisted living facilities where employees received the 2009 influenza vaccine by proportion immunized, Virginia, 2010



- Less than one-third of ALFs reported that many or most of the employees received the 2009 influenza vaccine.

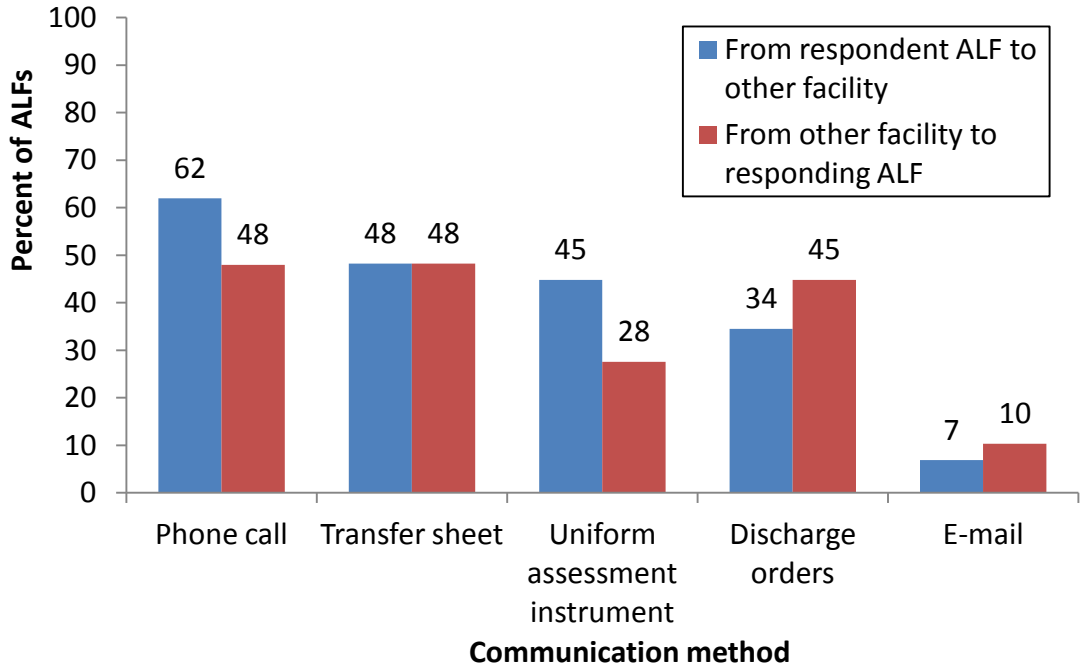
Communication

Communication within the facility

The most common communication methods to inform staff members about infection prevention-related announcements or updates within a facility were in-person meetings (78%), handouts/flyers (56%) and written memos (56%). E-mail was used in 28% of facilities. Other methods included in-services, employee orientation program, shift to shift reports, and staff meetings.

Communication during transfer of residents with infections between facilities

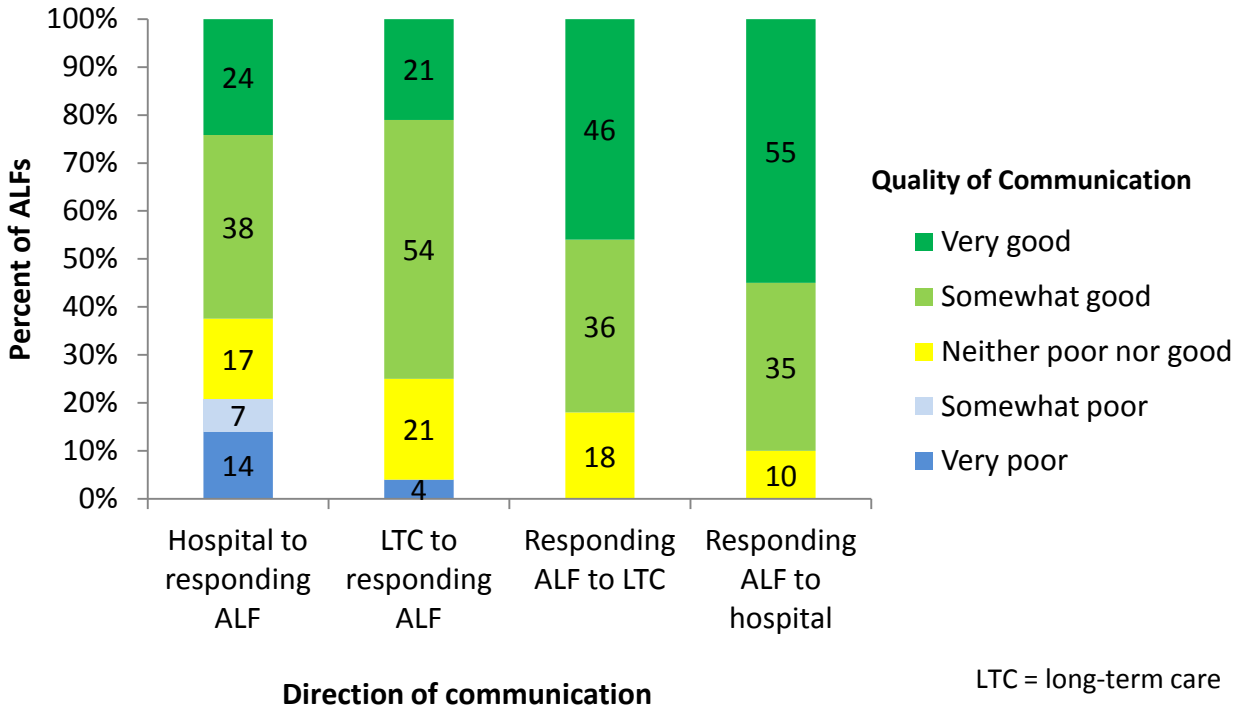
Graph 6: Percent of assisted living facilities (ALFs) giving and receiving information during transfer of residents with infections by communication method, Virginia, 2010



- More ALFs communicated by phone than any other method to provide information during the transfer of residents with infections.
- A similar percentage of ALFs received information during the transfer of residents with infections via phone calls, transfer sheets, and discharge orders.
- Most facilities did not use e-mail in these communications.
- One ALF reported that it did not receive information from other facilities during the transfer of residents with infections.

One ALF reported that the facility did not transfer residents to other LTCFs, and one ALF reported that the facility does not transfer residents to hospitals.

Graph 7: Percent of assisted living facilities (ALFs) indicating the quality of communication regarding infection information when transferring residents between facilities, Virginia, 2010



LTC = long-term care

- More ALFs reported a somewhat or very good quality of communication regarding infection information when transferring residents from their own facility to hospitals than hospitals to their facility (90% vs. 62%).
- Slightly more facilities reported a somewhat or very good quality of communication regarding infection information when transferring residents from their own facility to other long-term care facilities than other long-term care (LTC) facilities to their facility (82% vs. 75%).
- Approximately one-fifth of responding ALFs thought the quality of communication regarding infection information from hospitals during resident transfer was very poor or somewhat poor.

Communication barriers during transfer

Nearly three-fourths (71%) of responding ALFs reported at least one barrier to communication of infection information between facilities. Five facilities (16%) reported no barriers and four respondents (13%) indicated they did not know if communication barriers occurred.

Table 7: Percent of assisted living facilities (ALFs) indicating barriers to communication of infection information between the responding facility and other facilities when transferring residents with infections, Virginia, 2010

Barrier	Percent of ALFs
Lack of resident information	73%
Facility or state policies do not allow entry of residents with specified infections	59%
Lack of clarity in knowing who to talk to or how to contact other facilities	41%
Lack of time	27%
Concern that their facility will be held accountable for the infection	14%

- Of the ALFs reporting a barrier to communication during resident transfer, nearly three-fourths (73%) indicated that a lack of resident information was a barrier to communication during resident transfer.
- Other facilities (n=3) noted that they were not informed by hospitals or skilled nursing facilities about a resident's infection(s) until after discharge or after the resident was already admitted to the ALF.
- Another facility noted that hospitals sometimes underestimate the needs of patients living in ALFs (e.g., dementia) and do not notify the ALF of possible risks, leading to a lack of communication that can affect safety.

Communication with other organizations

Facilities may receive important communications regarding infection prevention-related changes to definitions, policies, procedures, or regulations from licensing agencies, state/local health department, CDC, and/or the Centers for Medicare and Medicaid Services (CMS).

- ALF respondents noted that some of these agencies did not communicate with their facility regarding infection prevention information: CMS (44%), CDC (22%), health department (6%), licensing agencies (6%). Twenty-two percent of facilities did not know if CMS communicated infection prevention messages to their facility compared to less than 10% of the other agencies.
- Of those receiving infection prevention-related messages, respondents indicated the quality of communication varied by information source. The proportions of facilities noting that the agencies communicated information well were as follows: licensing agencies (83%), state/local health departments (82%), CDC (74%), and CMS (50%).

Table 8: Percent of assisted living facilities reporting a positive relationship or comfort with the health department or licensing agency, Virginia, 2010

	Somewhat positive or very positive relationship	Somewhat comfortable or very comfortable contacting
Health department	74%	97%
Licensing agency	81%	71%

- Based on the respondents' experiences, most facilities (>70%) rated the relationship between the ALF and the health department as well as the licensing agency somewhat or very positive and would feel somewhat or very comfortable contacting either type of agency.
- Nearly all facilities were very comfortable contacting the health department while 71% of facilities were comfortable contacting licensing agencies.
- More facilities reported a somewhat positive or very positive relationship with the licensing agency than with the health department.

Table 9: Percent of assisted living facilities (ALFs) that would contact the health department by reason for contact, Virginia, 2010

Reason for contact	**Percent of ALFs**
Report a reportable disease	87%
Report an outbreak	87%
Have questions or need guidance on infection prevention-related issues	81%
Request health department-provided trainings	71%

- The top reasons most ALFs would contact the health department were when reporting an outbreak or a reportable disease.

One-third of facilities (32%) were in contact with the health department about infection prevention-related issues in 2009 one or two times, 13% were in contact three to five times, and 6% were in contact more than 10 times.

- Forty-two percent of ALFs reported that they were not in contact with the health department about infection prevention-related issues in 2009.

Challenges

Eighty-four percent of facilities reported one or more infection prevention challenges.

Table 10: Percent of assisted living facilities (ALFs) reporting top infection prevention challenges by topic, Virginia, 2010

Infection prevention challenge	Percent of ALFs
Infection risk-reduction behavior compliance for visitors	54%
Providing sufficient infection prevention education and training for staff	46%
Infection risk-reduction behavior compliance for residents	42%
Infection risk-reduction behavior compliance for vendors or contractual staff	35%
Tracking infections	35%
Environmental cleaning compliance	31%
Preventing spread of drug-resistant organisms	27%
Employee hand hygiene compliance	23%
Identifying and managing outbreaks/clusters	19%
Standard precautions compliance	19%
Transmission-based precautions compliance	19%
Handling and processing of linens, equipment, and medical waste	15%
Reporting compliance (health department and/or licensing agency)	15%
Bloodborne pathogens exposure control compliance	8%

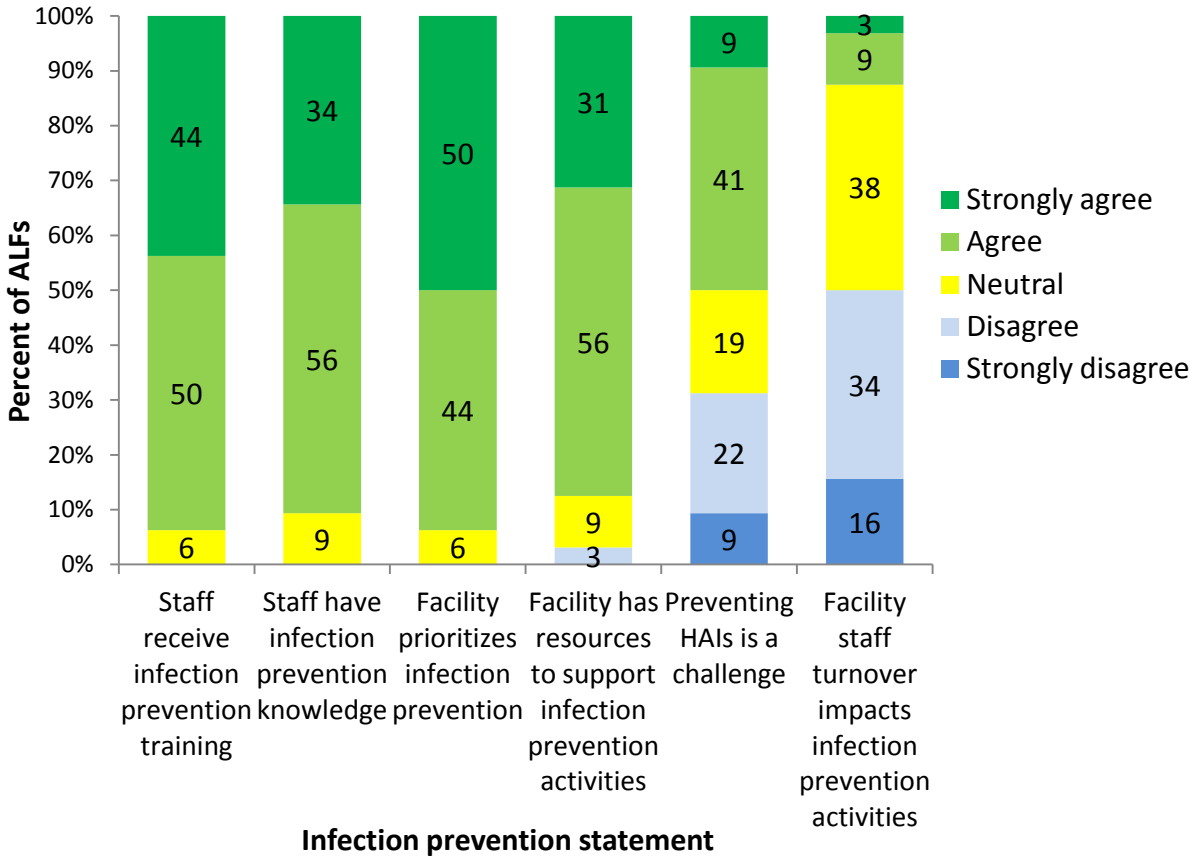
- The top five reported challenges were infection risk-reduction behavior compliance for visitors, residents, and vendors/contractual staff; providing sufficient infection prevention education and training for staff, and tracking infections.
- Reporting compliance with the health department or licensing agency and bloodborne pathogens exposure control compliance were not considered a challenge in many facilities.

Table 11: Percent of assisted living facilities (ALFs) reporting what influences infection prevention-related priorities, Virginia, 2010

Influences infection prevention-related priorities	Percent of ALFs
Facility administrators	75%
Facility staff member(s) overseeing infection prevention-related activities	63%
Chain/corporation administrators	34%
Past outbreak(s) or cluster(s)	31%
Citation(s) from regulatory agency	22%
Centers for Medicare and Medicaid Services (CMS)	13%

- In many ALFs, infection prevention priorities were influenced by facility administrators and/or the facility staff member overseeing infection prevention activities.

Graph 8: Percent of assisted living facilities (ALFs) responding to infection prevention statements by level of agreement, Virginia, 2010



- Most respondents agreed that staff receive infection prevention training, staff have infection prevention knowledge, the facility prioritizes infection prevention, and the facility has resources to support related activities.
- Only half of the facilities agreed or strongly agreed that preventing facility-associated infections among residents was a challenge.
- Approximately one-tenth (12%) of respondents agreed or strongly agreed that facility staff turnover impacts infection prevention activities.

Although relatively few facilities agreed that staff turnover impacted their infection prevention-related activities, many ALF respondents did indicate that efforts were in place to maintain infection prevention activities during times of staff turnover or when personnel resources were limited.

- Ninety percent of respondents included an infection-related component in the orientation of new employees.
- Facilities also made infection prevention-related trainings and resources accessible as needed (68%), made written and updated policies and procedures easily available (52%), cross-trained multiple staff members about infection prevention-related issues (48%), and/or designated a chain of command (39%).

- One facility noted that it implemented a special “Skills Day” during the year to review important information, including infection prevention, within each staff meeting that day.

Initiatives

Respondents had the opportunity to describe special infection prevention initiatives that were ongoing. One respondent indicated that the ALF manager and facility administrator have monthly quality assurance meetings to monitor infections and develop a plan to decrease the number of facility-acquired infections.

Nursing Homes

Note: Results in this section include stand-alone nursing homes and nursing homes that are part of a long-term care community setting (such as a continuing care retirement community) and may therefore also include responses that pertain to the assisted living level of care within the community. When taking the needs assessment, the facility respondent was not able to differentiate answers between the different levels of care because the survey questions asked about the entire facility as a whole (excluding independent living).

Facility demographics

The nursing home (NH) response rate was 34% (n=88) of the 257 facilities attempted to be contacted via the e-mail list provided to the HAI Program by the VDH Office of Licensure and Certification. Of the 88 NH respondents, 23% (n=20) also were affiliated with an assisted living facility (ALF) and/or a continuing care retirement community (CCRC).

While most facilities identified the facility as a nursing home, other examples of how facilities referred to themselves included continuing care retirement community (CCRC), rehabilitation facility/center, long-term care, and retirement community. Different types of rehabilitation facilities included acute rehab, skilled rehab, short term rehab, and skilled orthopedic and cardiac rehabilitation.

Sixty-eight percent of facilities identified themselves as for-profit, and 28% of the facilities identified themselves as not-for profit.

The majority of facilities were part of a chain or corporation (68%) and 22% were independently or privately owned. Other affiliations included community-based, faith-based, fraternal organization, state, and limited liability corporation.

At least half of respondents worked in a facility with at least 120 licensed beds (average=135, minimum=34, maximum=500). At the time of the needs assessment, half of respondents worked in a facility with a current census of 105 beds or more (average=117, minimum=31, maximum=289).

Organizations

Of the 70 facilities (81%) that reported they were members of other organizations, 91% were affiliated with Virginia Health Care Association (VHCA), 18% were affiliated with Virginia Association of Nonprofit Homes for the Aging (VANHA), 7% were affiliated with the Virginia Hospital and Healthcare Association (VHHA), and 6% were affiliated with the Virginia Assisted Living Association (VALA).

- Other memberships included VHQC, the American Health Care Association, the American Hospital Association, and the American Association of Services and Homes for the Aging.
- Two facilities were not affiliated with other organizations and 19% did not know.

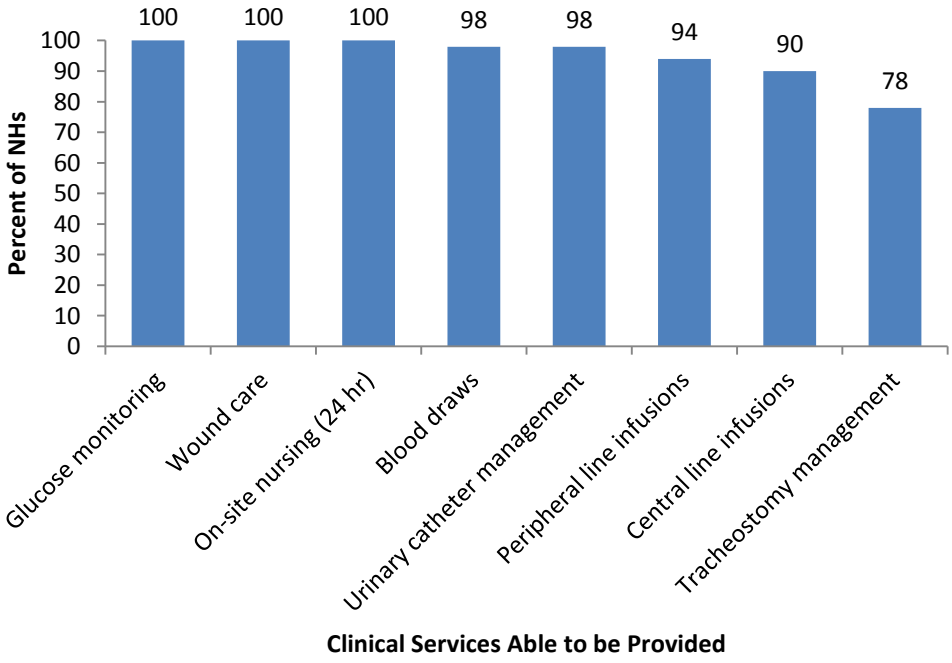
Respondent information
Half of the respondents had been in the facility for at least 3 years (average=6, minimum=0.1, maximum=30).

Facility services provided
Room composition

- Nearly all facilities had at least some private rooms available to their residents (96%). Of those facilities with at least some private rooms, 86% had some private rooms, and 13% had about half or more than half with private rooms. Four facilities (5%) had all private rooms.
- Ninety-four percent of responding facilities had at least some two-person semi-private rooms. Of those facilities with at least one two-person semi-private rooms, 79% had many two-person semi-private rooms. Two facilities (2%) had all two-person rooms.
- Seventy-eight percent of facilities did not have semi-private rooms for more than two people.

Clinical services able to be provided by facility staff or contractual staff

Graph 9: Percent of nursing homes (NHs) with facility staff or contractual staff able to provide selected clinical services by type of service, Virginia, 2010



- Note: These clinical services may be able to be provided by facility staff or contractual staff. Respondents did not specify what type of staff (facility or contractual) were able to provide the services.
- All nursing homes provided blood glucose monitoring, wound services, and on-site supervision by a nurse 24 hours a day.

- Nearly three-quarters (78%) of responding facilities were able to provide for the management of residents with a tracheostomy (78%).
- One respondent (3%) reported the facility was able to provide for the management of residents on a ventilator.

Facility policies

Nearly all facilities (98%) were aware of the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens (BBP) Exposure Control Standard. Nearly nine-tenths (87%) reported that their facility had a separate BBP Exposure Control Plan and 10% had the BBP Exposure Control Plan components included in other policies.

Table 13: Percent of nursing homes (NHs) with written policies addressing infection prevention-related issues, Virginia, 2010

Written policies addressing infection prevention-related issues	Percent of NHs
Employee hand hygiene	100%
Handling and disposal of medical waste	100%
Handling and processing of linens and other equipment	100%
Use of personal protective equipment	100%
Blood glucose monitoring	99%
Reporting requirement for the health department	99%
Standard precautions	99%
Transmission-based precautions	99%
Vaccinations of employees	99%
Vaccinations of residents	99%
Employees who become sick with communicable diseases or infections	97%
Pest control	94%
Transfer of residents with infections to and from other facilities	92%
Education of visitors regarding infection risk-reduction behavior	90%
Education of vendors or contractual staff regarding infection risk-reduction behavior	64%

- All facilities had written policies on employee hand hygiene, handling and disposal of medical waste, handing and processing of linens and other equipment, and use of personal protective equipment.
- At least 90% of facilities had policies addressing all of the infection prevention areas included in the table above except education of vendor or contractual staff regarding infection risk-reduction behavior.

Time spent on infection prevention activities

Fifty-eight percent of nursing homes reported that staff spent an average of 1 to 10 hours per week on infection prevention-related activities, which could include but were not limited to: tracking infections, educating staff, developing infection prevention policies, and monitoring hand hygiene. Nineteen percent of NHs spent an average of 11-20 hours per week on infection prevention activities, 9% spent no time, and 1% spent more than 20 hours per week.

Main point of contact for infection prevention-related issues
The main point of contact for infection prevention-related issues (POC) was defined as the staff member who had the most responsibility for infection prevention in the facility. Eighty-three percent of respondents reported themselves as the facility infection prevention point of contact. One facility reported there was no POC.

The majority of POCs had a nursing degree. Ninety-one percent of respondents reported that the POC was a registered nurse (RN), 6% reported the POC was a licensed practical nurse (LPN), and 2% reported the POC was a physician.

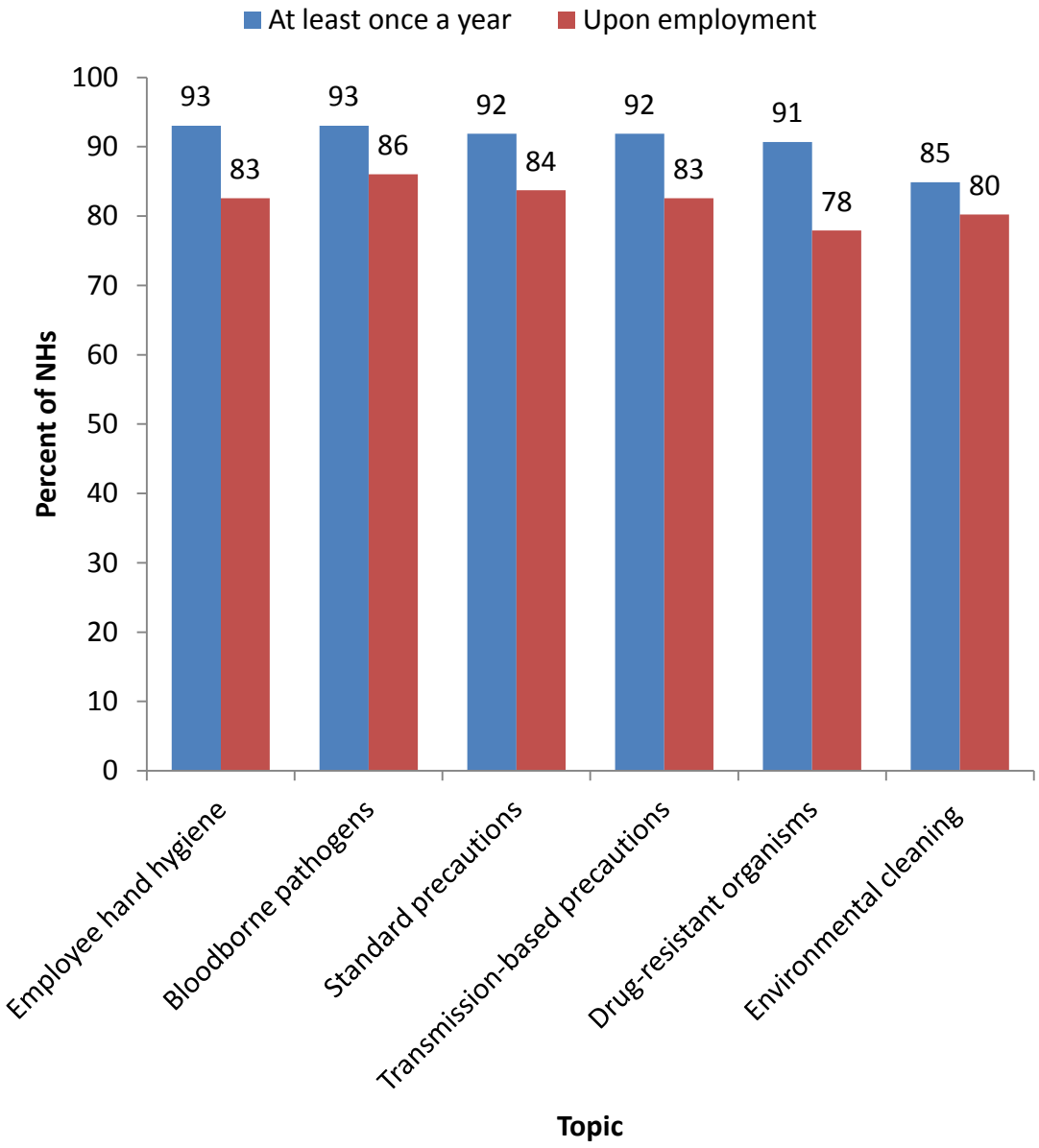
Thirty-seven percent of the current POCs had been overseeing infection prevention-related activities for at least five years, and approximately a quarter (28%) for 2-5 years. One-third of current POCs had been overseeing these activities for less than two years: 11% had this responsibility for 1 to 2 years, 11% for 6 months to a year, and 11% for fewer than 6 months.

Approximately three-fourths (76%) of respondents reported that their POC was not a national or state APIC member and 10% did not know if the POC was a member. Eight percent of NH POCs were both members of national APIC and the Virginia chapter of APIC and 6% were national APIC members only.

Infection prevention-related training
In three-fourths of the responding facilities, the POC provided infection prevention-related trainings. Over one-fifth (22%) of facilities had other facility staff members designated for infection prevention-related trainings that were not the POC which included: clinical care director, department/unit manager, director of nursing/assistant director of nursing, occupational nurse, facility educator and in-service coordinator, staff development coordinator, outside services, and corporate trainer. Four percent of facilities did not have a designated person who usually provided infection prevention-related trainings.

Agencies/organizations that provided infection prevention-related trainings to NHs included: local health department (46%), Virginia Health Care Association (23%), state health department (17%), VDH Office of Licensure and Certification (10%), Virginia Association of Nonprofit Homes for the Aging (6%), and the Department of Social Services (7%). Of note, it is not surprising a few facilities received training from the Department of Social Services, the regulatory body for ALFs, because these responses included those from long-term care communities with both nursing home and assisted living levels of care. In addition, many of the facilities reported other organizations provided infection prevention-related trainings including corporate level training, nearby hospitals, VHQC, consultants, and computer training systems. Other national resources included the Centers for Disease Control and Prevention, the Centers for Medicare and Medicaid Services, and OSHA.

Graph 10: Percent of nursing homes (NHs) offering infection prevention-related trainings to staff with resident contact by frequency and topic, Virginia, 2010



- For all topics, trainings were provided more commonly at least once a year as compared to upon employment.
- Trainings for multidrug-resistant organisms and environmental cleaning were the least frequently provided trainings.

Point of contact infection prevention training needs

Table 14: Percent of nursing homes (NHs) identifying training needs for the facility's main point of contact for infection prevention-related issues, Virginia, 2010

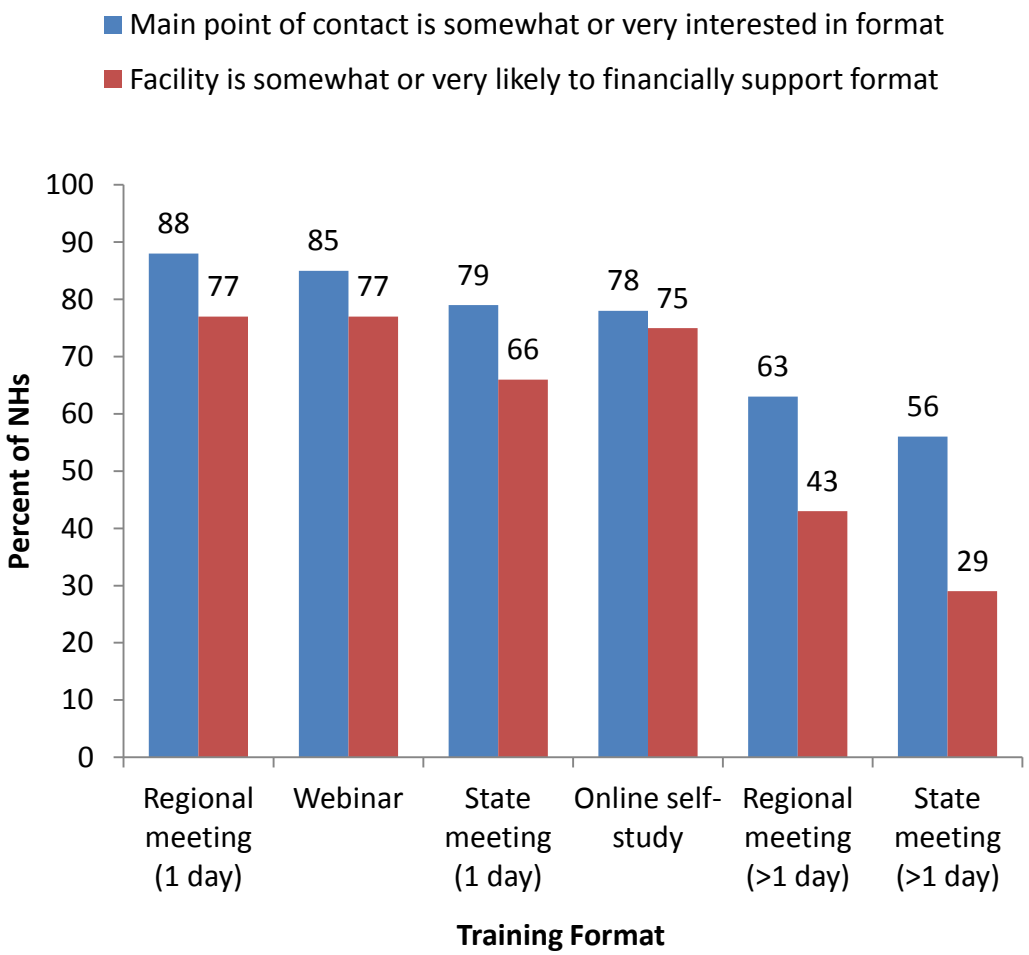
Training needed for the main point of contact for infection-prevention related issues	Percent of NHs
Outbreak/cluster identification and management	51%
How to educate vendors or contractual staff regarding infection risk-reduction behavior	50%
How to educate visitors regarding infection risk-reduction behavior	46%
Environmental cleaning and disinfection	45%
How to educate residents regarding infection risk-reduction behavior	41%
Multidrug-resistant organisms (MDROs)	39%
Diarrheal disease	38%
Reporting requirements to the licensing agency	38%
Transfer of residents with infections to and from other facilities	34%
Employees who become sick with communicable diseases or infections	31%
Bloodborne pathogens exposure control policies and procedures	29%
Routes of disease transmission	28%
Reporting requirements to the health department	28%
Vaccination policies	26%
Handling and processing of linens and other equipment	26%
Transmission-based precautions	24%
Handling and disposal of medical waste	24%
Blood glucose monitoring practices	22%
Use of personal protective equipment	20%
Employee hand hygiene	20%
Standard precautions	15%

- Half of the respondents reported that the infection prevention POC needed training on outbreaks and how to educate vendors or contractual staff regarding infection risk-reduction behavior.
- The top five training needs were outbreak identification and management; how to educate vendors/contractual staff, visitors and residents regarding infection risk-reduction behavior; and environmental cleaning and disinfection.
- The training topics least frequently needed for the POC included transmission-based precautions, handling and disposal of medical waste, blood glucose monitoring practices, use of personal protective equipment, employee hand hygiene, and standard precautions.

Training formats

Seventy-eight percent of responding facilities thought their POC would be interested or very interested in "train-the-trainer" programs.

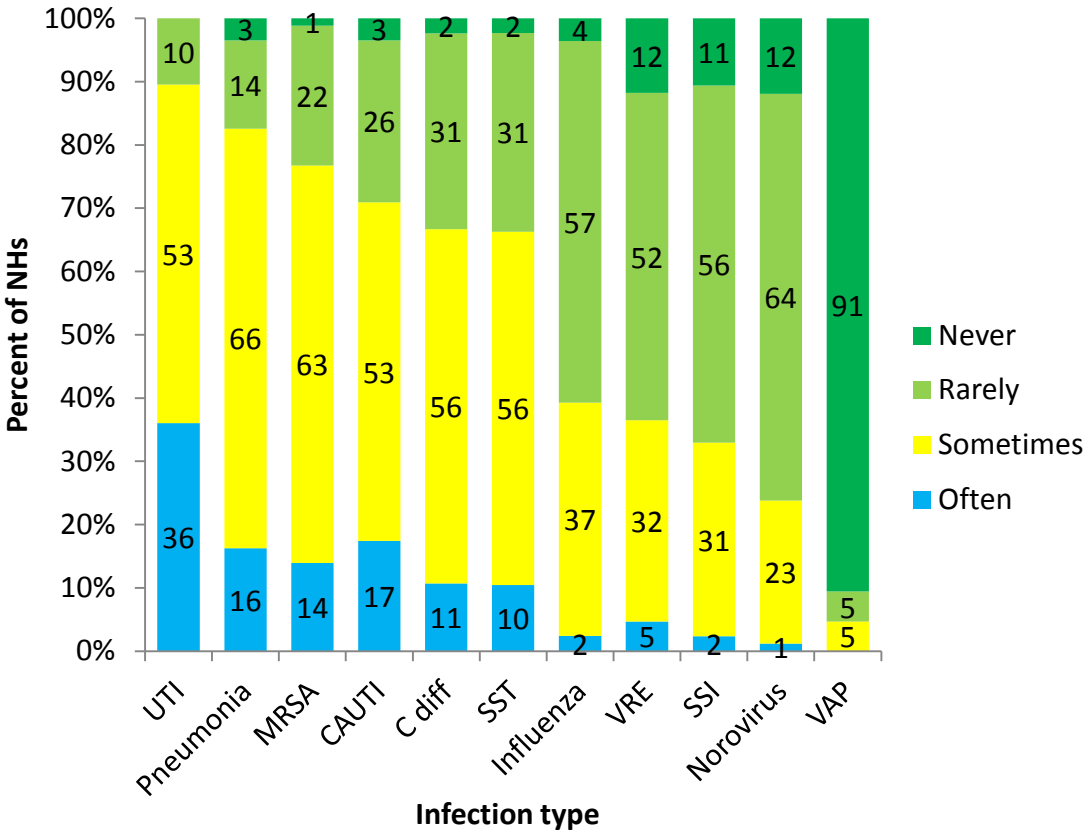
Graph 11: Percent of nursing homes (NHs) reporting interest and likelihood of financial support of training by training format, Virginia, 2010



- More respondents thought the POCs would be interested in each training format than thought the facility would be likely to financially support the training format.
    - Multi-day meetings had the largest gaps between the POC's reported interest and the facility's likelihood to financially support the training format.
- Regional one-day meetings and webinars were most likely to be of interest to the POC and supported by the facility.
- Multi-day meetings were less likely to be of interest to POCs and less likely to be financially supported by the facility.

Frequency of specific infections

Graph 12: Percent of nursing homes (NHs) reporting infections by frequency category and infection type, Virginia, 2010



UTI = urinary tract infection
Pneumonia does not include ventilator-associated
SST = skin and soft tissue infection
C. difficile = *Clostridium difficile* infection
MRSA = methicillin-resistant *Staphylococcus aureus*
CAUTI = catheter-associated urinary tract infection
VRE = vancomycin-resistant *Enterococcus*
VAP = ventilator-associated pneumonia

- Ninety-one percent of facilities reported that ventilator-associated pneumonia (VAP) infections never occurred in their facility.
- More than half of the responding facilities indicated that there was rarely a case of norovirus, surgical site infection (SSI), vancomycin-resistant *Enterococcus* (VRE) infection, or influenza.
- The most common infections included urinary tract infections (both catheter-associated and non-catheter-associated), non-ventilator-associated pneumonia, and methicillin-resistant *Staphylococcus aureus* (MRSA).

A variety of methods were used by responding facilities to identify infections in their residents. In nearly all facilities (98%), staff reviewed microbiology and/or laboratory reports and/or observed residents and referred them for medical care and diagnosis (91%). Eighty-eight percent of facilities reviewed healthcare provider notes, 84% reviewed new antibiotic orders, and 45% used resident, friend or family member reports.

Tracking and recording infection data

All NHs tracked and recorded infection data.

- **Surveillance area:** Nearly all facilities collected data to track infections in all of the resident units facility-wide (95%).
- **Recording method** (percentages are not mutually exclusive)**:** Eighty-seven percent of facilities used a spreadsheet or log book, and 24% used an electronic database to track and record infection data.
- **Definitions** (percentages are not mutually exclusive): While most facilities used Centers for Disease Control and Prevention (CDC) definitions to identify infections (69%), 50% used facility- or corporate-developed definitions, 21% used CDC-modified definitions, and 17% facilities used McGeer criteria.
- **Rates calculated** (percentages are not mutually exclusive)**:** A rate is number of new cases per population in a given time period.
    - Seventy-four percent of facilities calculated infection-specific rates, and 42% calculated device-related infection rates (e.g., catheter-associated urinary tract infection rate). Eight facilities (10%) did not calculate infection rates.
- Other calculations included overall HAI rate, HAI rate by sites and/or pathogens, and community-associated infection rate.
- **Reports:** Nearly all NHs (95%) created reports with facility infection data.
- **Sharing data:** Nearly all NHs (99%) shared their infection data with facility staff.

Table 15: Percent of nursing homes sharing infection data by audience type, Virginia, 2010

Audience type	Percent of NHs
Leadership (e.g., director of nursing, medical director)	98%
Nursing staff	80%
Unit managers	80%
Physicians	71%
Owners (e.g., Board of Directors)	53%

    - Of those that shared data, almost all did so with facility leadership and most shared with nursing staff and/or unit managers.
    - Data were least frequently shared with facility owners/Board of Directors.
    - Some facilities noted that infection data were shared with the quality committee/quality assurance team/performance improvement team. Few facilities reported that the corporate office, nearby hospital(s), and/or safety committee received infection data.

- **Routine collection of data in the facilities that track and record infection data**:

Table 16: Percent of nursing homes (NHs) conducting surveillance by infection type, Virginia, 2010

Infection type	Percent of NHs
Urinary tract infection (UTI)	96%
Skin and soft tissue infection (SST)	92%
Clostridium difficile infection	91%
Catheter-associated urinary tract infection (CAUTI)	91%
Methicillin-resistant *Staphylococcus aureus* (MRSA)	89%
Pneumonia, does not include ventilator-associated	85%
Vancomycin-resistant *Enterococcus (*VRE)	84%
Surgical site infection (SSI)	79%
Influenza	78%
Norovirus	67%
Ventilator-associated pneumonia (VAP)	18%

- At least 90% of responding NHs that tracked infections conducted surveillance on urinary tract infections, skin and soft tissue infections, *Clostridium difficile* infections, and/or catheter-associated urinary tract infections.
- Less than one-fifth of the responding NHs that tracked infections collected data on ventilator-associated pneumonia.

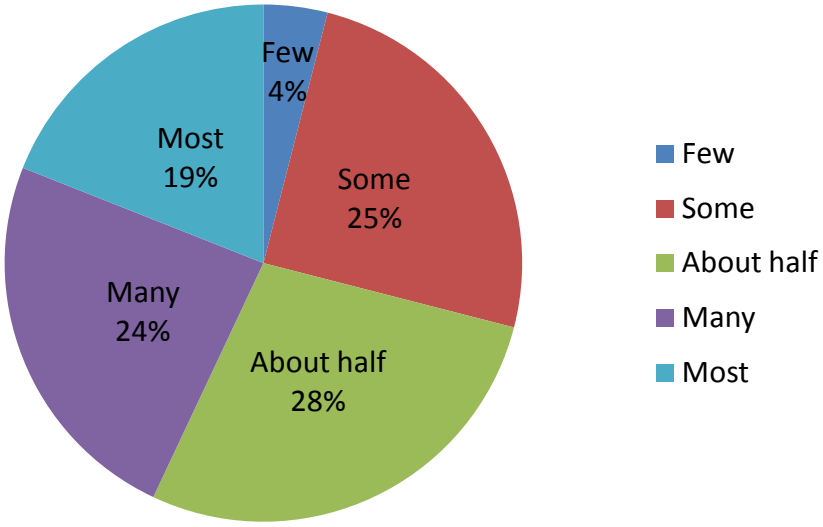
Vaccines

Table 17: Percent of nursing homes (NHs) strongly encouraging vaccinations or proof of immunity and/or keeping immunization records for the selected vaccine-preventable diseases by employee or resident status, Virginia, 2010

Vaccine	Strongly encouraged		Immunization records kept		
	For residents	For employees	For residents	For employees	Neither for residents nor employees
Pneumonia	98%	36%	98%	49%	0%
Seasonal influenza	99%	98%	97%	97%	0%
Hepatitis B	20%	98%	56%	97%	0%

- Seasonal influenza immunization was both strongly encouraged and recorded for employees and residents.
- Pneumococcal immunization was more often strongly encouraged and recorded for residents than employees while hepatitis B immunization was more often strongly encouraged and recorded for employees than residents.
- All NHs kept immunization records for residents and/or employees for the selected diseases above.

Graph 13: Percent of nursing homes where employees received the 2009 influenza vaccine by proportion immunized, Virginia, 2010



- Less than half of the facilities reported that many or most of the employees received the 2009 influenza vaccine.

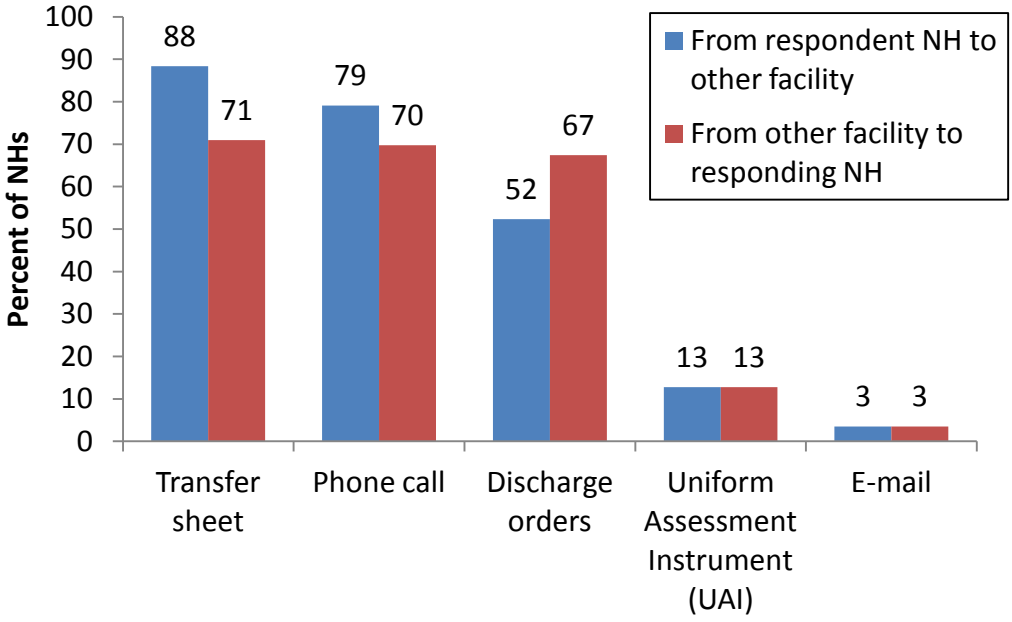
Communication

Communication within the facility

The most common communication method to inform staff members about infection prevention-related announcements or updates within a facility was in-person meetings (75%), followed by handouts/flyers (54%) and written memos (49%). E-mail was used in 23% of facilities. Other methods included alerts, the facility monthly infection prevention newsletter, posting information near the time clocks and in the employee break rooms, announcing information to unit managers, and in-services.

Communication during transfer of residents with infections between facilities

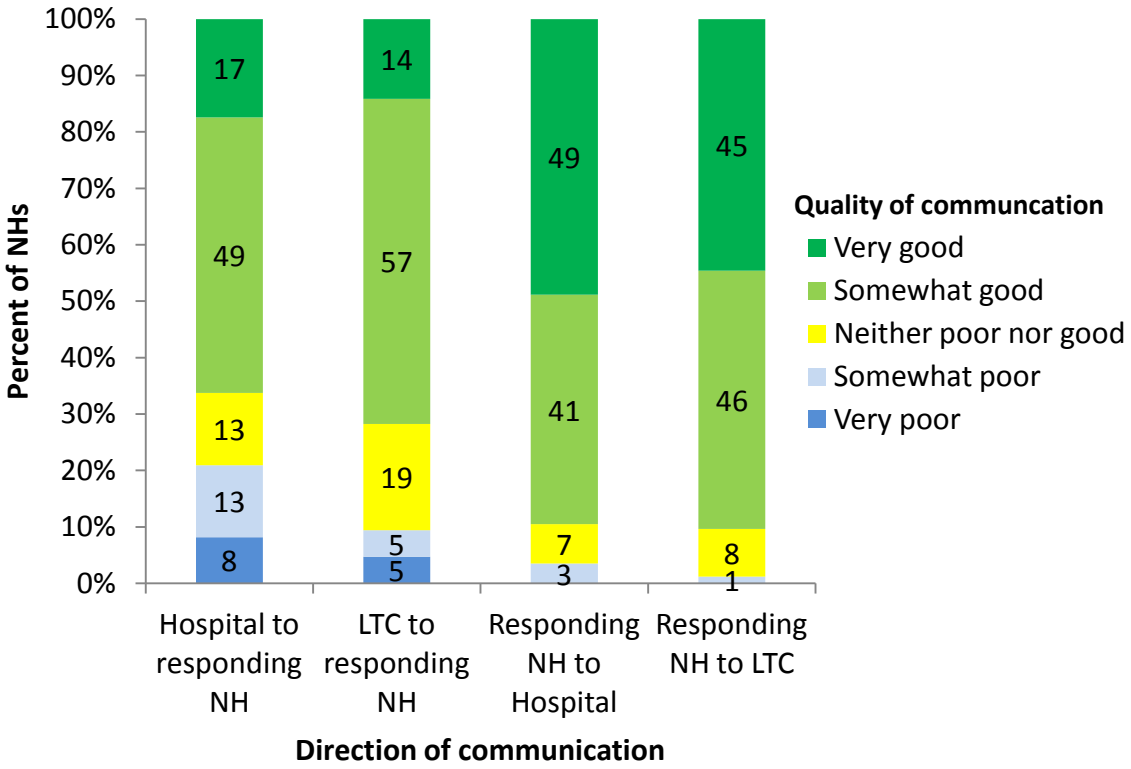
Graph 14: Percent of nursing homes (NHs) giving and receiving information during the transfer of residents with infections by communication method, Virginia, 2010



- More facilities used communication by transfer sheet and phone to give and receive information during the transfer of residents with infections than uniform assessment instruments (UAIs), discharge orders, or email.
- Most facilities did not use the UAI or e-mail in these communications.
- More facilities received discharge orders from other facilities than information provided to other facilities.
- Two responding facilities indicated that they do not receive communications from other facilities, even though all responding facilities indicated that they send communications to other facilities.

Two NHs reported that the facility did not transfer residents to other LTCFs, and two NHs reported that the facility does not transfer residents to hospitals.

Graph 15: Percent of nursing homes (NHs) indicating the quality of communication regarding infection information when transferring residents between facilities, Virginia, 2010



- More NHs reported a somewhat or very good quality of communication regarding infection information when transferring residents from their own facility to hospitals and LTC than when receiving residents from those two types of facilities.
- Over one-fifth of NHs reported that the quality of communication from hospitals was somewhat poor or very poor, and one-tenth of NHs reported that the quality of communication from other LTCFs was somewhat poor or very poor.

Communication barriers during transfer

Sixty-five percent of responding NHs reported at least one barrier to communication of infection information between facilities, and 29% indicated no barriers.

Table 18: Percent of nursing homes (NHs) indicating barriers to communication of infection information between the responding facility and other facilities when transferring residents with infections, Virginia, 2010

Barrier	Percent of NHs
Lack of resident information	68%
Lack of clarity in knowing who to talk to or how to contact other facilities	41%
Lack of time	20%
Concern that their facility will be held accountable for the infection	18%
Facility or state policies do not allow entry of residents with specified infections	12%

- Of the NHs reporting barriers to communication, over two-thirds indicated that a lack of resident information was a barrier to communication during resident transfer.
- Other barriers and comments included (n=11):
    - Difficulty getting someone to talk to within the required time
    - Discharge information was not always updated in the computer
    - Hospitals (hospital case managers) did not always communicate necessary information including if the patient has a communicable disease or multidrug-resistant organism
    - Hospitals were often anxious to discharge patients and may have hidden information or had been reluctant to reveal certain infectious processes so the other facility will agree to accept the patient
    - Hospital lab results were not available at the time of transfer and/or were not sent to the receiving facility
    - Information is not provided at the time patient is received but is discovered later in the chart documentation
    - Receiver of resident is busy and does not have time to adequately listen and digest the information

Communication with other organizations

Facilities may receive important communications regarding infection prevention-related changes to definitions, policies, procedures, or regulations from licensing agencies, state/local health department, CDC, and/or the Centers for Medicare and Medicaid Services (CMS).

- NH respondents noted that some of these agencies did <u>not</u> communicate with their facility regarding infection prevention information: CDC (12%), CMS (6%), licensing agencies (6%), health department (1%). Fifteen percent of respondents did not know if CMS communicated infection prevention messages, and 17% of respondents did not know if the licensing agency communicated infection prevention messages to their facility.

- Of those receiving infection prevention-related messages, respondents indicated the quality of communication varied by information source. The proportions of facilities noting that the agencies communicated information well were as follows: state/local health departments (67%), CDC (49%), CMS (40%), and licensing agencies (39%).

Table 19: Percent of nursing homes reporting a positive relationship or comfort with the health department or licensing agency, Virginia, 2010

	Somewhat positive or very positive relationship	Somewhat comfortable or very comfortable contacting
Health department	79%	92%
Licensing agency	53%	76%

- Based on the respondents' experiences, over three-fourths of NHs rated the relationship between the NH and the health department as somewhat or very positive and would feel somewhat or very comfortable contacting the health department.
- More NHs reported a somewhat positive or very positive relationship with the health department than with the licensing agency.
- More NHs reported they were somewhat comfortable or very comfortable contacting the health department as compared to the licensing agency.

Table 20: Percent of nursing homes (NHs) that would contact the health department by reason for contact, Virginia, 2010

Reason for contact	**Percent of NHs**
Report a reportable disease	98%
Report an outbreak	98%
Have questions or need guidance on infection prevention-related issues	92%
Request health department-provided trainings	63%

- Nearly all NHs would contact the health department when reporting a reportable disease or outbreak.
- Other reasons some respondents indicated they would contact the health department included obtaining specimen collection containers, obtain information about possible outbreaks or public health issues going on in the community, and obtaining vaccination dates for residents and employees.

More than one-third of facilities (40%) were in contact with the health department about infection prevention-related issues in 2009 one or two times, 21% were in contact three to five times, and 11% were in contact more than 6 times.

- Thirteen percent of NHs reported that they were not in contact with the health department about infection prevention-related issues in 2009, and 15% did not know.

Challenges

Eighty-nine percent of facilities reported one or more infection prevention challenges.

Table 21: Percent of nursing homes (NHs) reporting top infection prevention challenges by topic, Virginia, 2010

Infection prevention challenge	Percent of NHs
Employee hand hygiene compliance	48%
Environmental cleaning compliance	43%
Infection risk-reduction behavior compliance for visitors	43%
Infection risk-reduction behavior compliance for residents	39%
Providing sufficient IC information and training for staff	31%
Handling and processing of linens, equipment, and medical waste	25%
Transmission-based precautions compliance	23%
Identifying and managing outbreaks/clusters	22%
Preventing MDRO spread	22%
Infection risk-reduction behavior compliance for vendors or contractual staff	19%
Standard precautions compliance	18%
Tracking infections	18%
Bloodborne pathogens exposure control compliance	8%
Reporting compliance (health department and/or licensing agency)	3%

- The top five reported challenges were employee hand hygiene compliance, environmental cleaning compliance, infection risk-reduction behavior compliance for visitors and residents, and providing sufficient infection prevention information and training to staff.
- Reporting compliance with the health department or licensing agency and bloodborne pathogens exposure control compliance were not considered a challenge.

Table 22: Percent of nursing homes (NHs) reporting what influences infection prevention-related priorities, Virginia, 2010

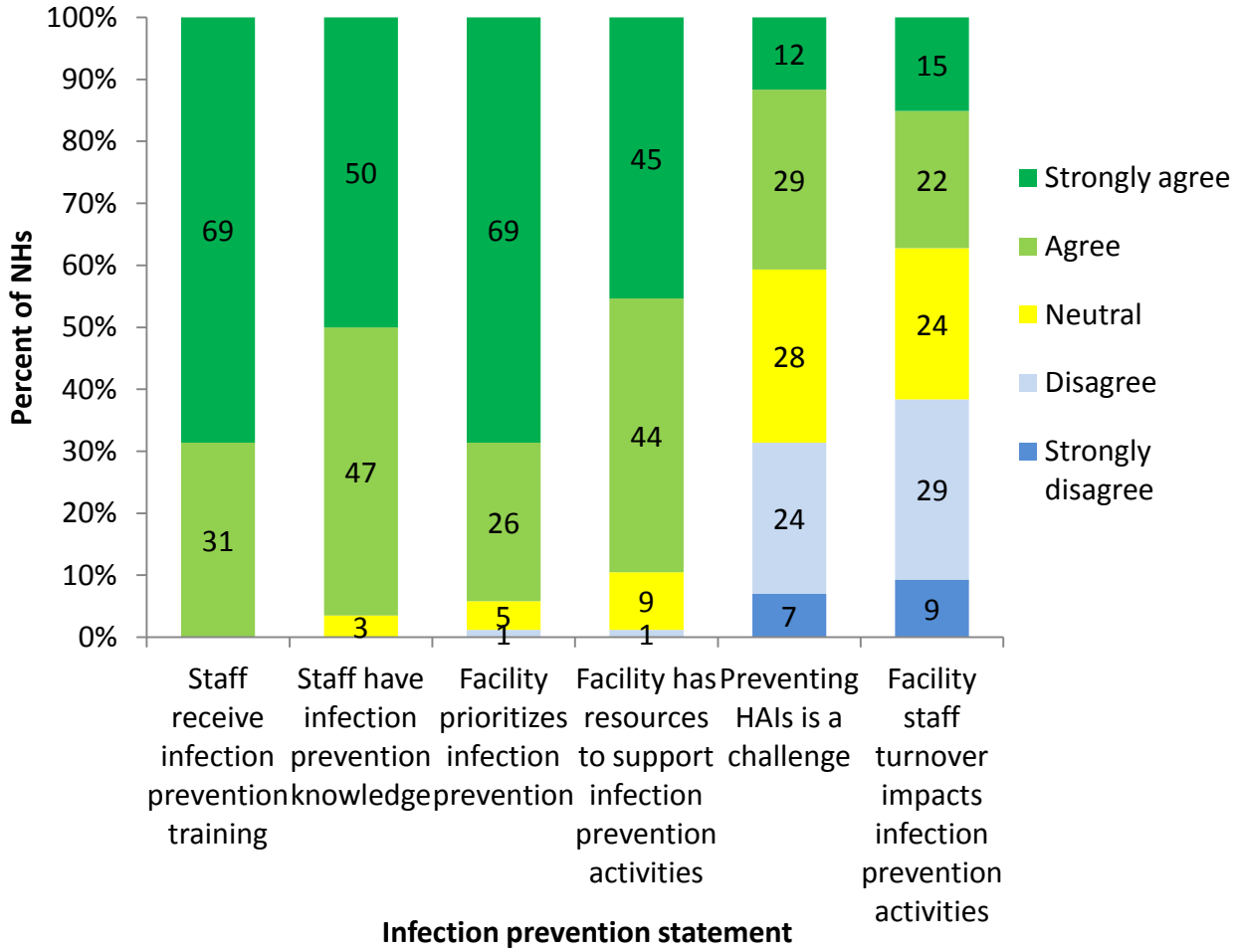
Influences infection prevention-related priorities	Percent of NHs
Facility staff member(s) overseeing infection prevention-related activities	82%
Facility administrators	55%
Chain/corporation administrators	52%
Centers for Medicare and Medicaid Services (CMS)	47%
Past outbreak(s) or cluster(s)	46%
Citation(s) from regulatory agency	29%

- The top influence in prioritizing infection prevention in NHs was the facility staff member overseeing infection prevention activities.
- Other entities indicated by respondents to affect the prioritization of infection prevention-related activities included annual risk assessment survey findings, areas of concern identified by surveillance data, CDC guideline revisions, medical director and

attending physicians, corporate intervention, and local and state informational notifications.

Perceptions about infection prevention

Graph 16: Percent of nursing homes (NHs) responding to infection prevention statements by level of agreement, Virginia, 2010



- The majority of NHs agreed or strongly agreed that staff received infection prevention training, staff had infection prevention knowledge, the facility prioritized infection prevention, and the facility had resources to support infection prevention activities.
- Less than half of the respondents agreed or strongly agreed that preventing facility-associated infections among residents was a challenge.
- Over one-third of respondents agreed or strongly agreed that facility staff turnover impacts infection prevention activities.

Many NH respondents indicated that they maintained infection prevention-related activities during times of staff turnover or when personnel resources were limited.

- Eighty-six percent of respondents included an infection-related component in the orientation of new employees.
- Facilities also made infection prevention-related trainings and resources accessible as needed (78%), made written and updated policies and procedures easily available (73%), designated a chain of command (45%), and/or cross-trained multiple staff members about infection prevention-related issues (43%).
- Other facilities noted that information was routinely communicated during regularly scheduled staff meetings and that infection control was expected from all employees.

Initiatives and Comments

Respondents had the opportunity to describe special infection prevention initiatives that were ongoing.

- Some NHs implemented a special week or newsletter to highlight infection prevention information. One facility had an infection prevention week display table with posters, informational pamphlets and "questions of the day" followed by an all-staff meeting on "Take Your Shot at the Flu" provided by the infection preventionist. Another facility had a fun educational activity week. One facility sponsored an infection prevention newsletter and seasonal vaccination campaign.
- Other practices implemented in some NHs included: administering flu consent and vaccination to all residents and staff; conducting MRSA prevalence studies; monitoring wounds for infection; culturing every resident admitted or readmitted for MRSA or VRE and using probiotics for residents who are started on antibiotics; and using a disinfectant every other day for room cleaning of residents with *Clostridium difficile*.
- One facility highlighted that VHQC was helping to provide education for its staff.

Some NHs also offered comments at the end of the needs assessment.

- New infection preventionists are seeking out the APIC manual for long-term care and interested in gaining educational opportunities through organizations, online learning, and the CDC website.
- It is helpful when the facility has a hospital infection control department to work with and the facility's administrator has made infection prevention a priority.

Discussion and Recommendations

Facility demographics

Although facilities may be categorized as an ALF or NH for purposes of licensure and certification, it is important to recognize the current language preferences for facility and resident names as well as resident composition for both ALF and NH settings. For the purposes of this survey, we chose ALF and NH to align with terms used by their licensing/regulatory agencies. We discovered that many facilities in both settings referred to their facility in terms other than ALF or NH. For example, a number of assisted living respondents did not identify with the term ALF, especially with the use of the term "facility" and instead preferred terms such as "formal adult home" or "residential care". Some NH respondents referred to their facilities as "long-term care" or "rehabilitation".

NHs appeared to have financial, educational, and/or policy-related support for infection prevention, with the majority of facilities indicating affiliation with a chain or corporation and/or membership in one or more state organizations. *While it is important for both types of facilities to continue increasing access to infection prevention training and policy resources, ALFs with limited resources are further encouraged to reach out to their local health departments and other organizations and partners for additional support.* Other methods of increasing access to infection prevention resources and personnel are linking with local infection preventionists as mentors/resources and investing in membership to APIC or APIC-VA. *Taking advantage of training opportunities provided by state agencies, long-term care organizations, and APIC national and/or Virginia's local chapter can help bolster the infection prevention knowledge base of staff and improve compliance with requirements for facility licensure.*

Facility services provided and staffing levels

Nearly all facilities were able to provide blood glucose monitoring (BGM), a service with identified risk of infection transmission in ALF and NH settings; this emphasizes the need for ongoing education and monitoring of staff to assure compliance with proper BGM practices. *Sufficient education and resources must be available to staff so that all clinical services, including BGM, are able to be provided in a safe manner consistent with appropriate infection prevention practices.*

Facility policies

Compared to ALFs, a higher percentage of NHs had written policies for all topics addressed in the needs assessment. The least common policy topic in both NHs and ALFs was the education of visitors and vendors/contract staff regarding infection risk-reduction behavior. *Although it is not required by regulation, it is advisable for facilities to have a policy to ensure vendors/contract staff are in compliance with the facility's infection prevention and control practices. In addition, the education of visitors who can also act as vectors for disease transmission may help prevent the spread of infection within the facility.*

Nearly all respondents reported that they were aware of the OSHA Bloodborne Pathogens (BBP) Standard that requires a written bloodborne pathogen and body fluids policy and nearly

all had a BBP Exposure Control Plan in place. *Nearly all facilities had the BBP Exposure Control Plan in a separate written document or had components in other policies; although a separate plan is not required, it may be easier to keep a single document updated and accessible rather than have the challenge of searching through several policies to find and/or update the information. All facilities should re-evaluate the potential for occupational exposures to blood or other potentially infectious body fluids and update their OSHA BBP Exposure Control Plan at least annually.*

To prevent potential transmission of infection, written infection prevention policies and procedures should be appropriate for the clinical services provided by the facility and the types of infections that may be encountered in the facility. Despite the fact that nearly all ALFs were able to provide blood glucose monitoring to their residents, only approximately 80% reported having policies addressing blood glucose monitoring. *All facilities providing blood glucose monitoring (BGM) should review their written policies to ensure a BGM policy exists, reflects the most current infection control guidelines and recommendations, and is accurately used by their staff. It is important to ensure that policies and practices do not allow reusable fingerstick devices (i.e., penlets) to be used for assisted blood glucose monitoring.*

Main point of contact for infection prevention-related issues

Stability and consistency in leadership are often seen as strengths for any position or role; therefore, it was encouraging that the POC for infection prevention had been overseeing the program for at least five years in 56% of ALFs and 37% of NHs. Furthermore, all but two facilities (one ALF, one NH) had a POC. The POC was found to play an important educational role, providing most of the training in NHs and half in ALFs. *It may be beneficial to have a designated on-site POC provide the infection prevention training to increase consistency of information dissemination.*

Infection prevention-related training

While there are some infection prevention topics that require training annually and upon employment, neither all ALFs nor all NHs provided the necessary training on any topic. Both ALFs and NHs were more compliant in providing training annually as compared to training upon employment. *Therefore, training upon employment should become a focus in both ALFs and NHs in order to establish proper infection prevention practices and expectations to prevent staff members from developing subpar infection prevention habits.*

Although the majority of ALFs and NHs provided training for the six infection prevention topics captured in the assessment, some topics were addressed less often than others. A number of NHs had not provided infection prevention training regarding multidrug-resistant organisms (MDROs) and environmental cleaning. A number of ALFs needed to provide infection prevention training regarding MDROs, transmission-based precautions, and bloodborne pathogens. The lack of proper annual training and training upon employment for bloodborne pathogens when nearly every ALF is able to provide blood glucose monitoring is of concern. *ALFs and NHs should revisit their training plans regularly and correct any infection prevention gaps.*

A higher percentage of ALFs preferred online self-study than other training formats. Webinars and one-day regional meetings were also noted to be of interest to the POC in both settings and likely to be financially supported. Potential limitations of online self-study and webinars may include less engagement with the material, possible use of shortcuts, barriers obtaining access to a computer, and lack of networking opportunities with peers and colleagues.

Tracking and recording infection data

Tracking infection data on a continuous basis is important for establishing a baseline of what is expected in that facility, helping to identify outbreaks, and following progress within a facility. Therefore, the fact that only half of ALFs were tracking infection data indicates a need for further education and the development of tools to assist facilities in surveillance. In addition, although the use of electronic systems for surveillance purposes was not widespread in ALFs and NHs, electronic systems may become more useful and necessary for reporting in these settings in the future.

When conducting surveillance, standardized definitions should be used to ensure consistency and accuracy. It is encouraging that CDC definitions were used most often in both ALFs and NHs. *However, facilities and corporations should be judicious in modifying CDC definitions and should minimize any variation from standardized surveillance definitions.*

Differences between infections identified in ALFs and NHs may be due to the amount or manner of infection surveillance, the types of infections monitored in the facility, the services provided, and/or may reflect true differences in the types of infections occurring. For example, some of the responding ALFs commented that their settings support younger residents, which is important to consider when assessing the risk for certain infections, such as sexually transmitted infections. *Each facility should regularly assess the services provided, the types of residents supported, and types of infections of potential risk in the facility in order to develop a comprehensive and tailored surveillance plan.*

The simple collection of data may not improve compliance and safety within the facility; however, by sharing the infection data with key personnel and stakeholders, gaps may be identified and may promote changes in practice. *Data should be shared with facility leadership as well as direct care staff to help engage them in identifying areas for improvement.* Sharing infection data with staff improves transparency among care providers within the facility and may help drive change.

Vaccines

Although facilities indicated that they strongly recommended the influenza vaccine, both NHs and ALFs reported relatively low influenza vaccination rates among their staff. Therefore, it is clear that a facility's strong recommendation does not necessarily equate to vaccination coverage. *Facility policies should maximize annual influenza vaccination coverage among staff and residents. Because ALF and NH staff provide care to residents at high risk for complications of influenza, it is critical that they receive influenza vaccine annually. To increase staff influenza*

vaccination coverage, facilities should educate staff regarding the benefits of annual influenza vaccination, and monitor vaccination coverage at regular intervals.

At the time of the needs assessment, adult vaccination recommendations did not strongly encourage hepatitis B vaccination for residents of long-term care facilities. In October 2011, CDC's Advisory Committee on Immunization Practices (ACIP) voted to recommend routine hepatitis B immunization of unvaccinated adults with diabetes who are younger than age 60 and optional use of the vaccine in adults with diabetes age 60 and older "based on a patient's likely need for assisted blood glucose monitoring, likelihood of acquiring hepatitis B, and likelihood of immune response to vaccination" (Centers for Disease Control and Prevention 2012).

Communication with external organizations

While outside organizations (e.g., the Centers for Disease Control and Prevention, the Centers for Medicare and Medicaid Services, licensing agencies, state/local health department) provide important infection prevention-related communications to the facility, needs assessment responses revealed that the quality of communication can be enhanced. Improved communication may lead to stronger relationships and increase the comfort of facilities reaching out and working with the health department and/or the licensing agency. *Therefore, organizations should examine their communication strategies with ALFs and NHs, and facilities should consider how the resources and expertise of various state/local organizations may be of benefit to them, such as assisting with staff training on infection prevention-related topics.*

Communication between facilities during resident transfer

Obtaining proper and timely information during the transfer of residents between healthcare facilities was identified as a challenge within this needs assessment. Responding facilities reported providing receiving facilities important infection information more often than receiving the infection information from other facilities. Although this may be a reporting bias, it nonetheless points to the need for all facilities to ensure good communication with their giving and receiving facilities.

Both ALFs and NHs reported barriers to communication of infection information between facilities during resident transfer. Although it is true that ALFs cannot accept some residents due to specified infections (e.g., pulmonary tuberculosis), it is important that the facility not limit admission for types of infections that they would be able to support depending on their facility and their capacity to practice proper transmission-based precautions. Lack of clarity in knowing who to talk to or how to contact other facilities was an issue in both ALFs and NHs. *This issue should be addressed by establishing ongoing communication between infection preventionists, case managers, and/or other relevant staff in facilities that commonly transfer residents to and from a given ALF or NH*. Developing and adhering to written resident transfer policies and protocols can also help hold facilities and staff accountable. *The VDH HAI Program strongly encourages the use of a transfer form each time a resident is transferred between facilities to help improve this type of inter-facility communication*.

Infection prevention challenges

The top challenges for both ALFs and NHs were the ongoing education of their staff regarding infection prevention and the infection risk reduction behavior compliance for visitors and residents. Both of these challenges require ongoing education and teaching tools. *External agencies and organizations, including the health department, can play a role in developing or disseminating resources to empower facilities with educational tools and training opportunities that address infection prevention strategies*.

Use of Needs Assessment Results to Guide Training

To fill some of the infection prevention POC educational needs identified in the assessment, the VDH HAI Program partnered with the Virginia Health Care Association (VHCA) and an Advisory Committee of long-term care stakeholders including other organizations such as the Virginia Association of Nonprofit Homes for the Aging (VANHA), the Virginia Assisted Living Association (VALA), licensing agencies (VDH Office of Licensure and Certification and Virginia Department of Social Services - Division of Licensing Programs), the Virginia chapter of the Association for Professionals in Infection Control and Epidemiology (APIC-VA), and ALF/NH providers to develop a training curriculum and methodology for implementing a set of trainings for the ALF and NH audience. Although computer training formats were preferred by respondents of the needs assessment likely due to their convenience and low expense, free regional in-person trainings were selected to allow for participant interaction and customization of breakout sessions to address topics that were of most interest locally. Slides and resources were posted online after the training to allow facility staff to engage with the material at their own pace.

Trainings were held in six locations throughout the state over the summer and fall of 2011. Most were two days in length with the first day targeted for assisted living and the second day targeted to the nursing home setting. Facility infection prevention contacts and local health department staff were invited to attend and each participant received a *Successful Strategies for Infection Prevention in Assisted Living Facilities and Nursing Homes* toolkit in binder and DVD formats. This toolkit contained training presentations, policy templates, logs, and fact sheets, totaling nearly 100 resources that addressed outbreak identification and control, surveillance, bloodborne pathogen prevention and blood glucose monitoring, environmental cleaning, standard and transmission-based precautions, and several other topics addressing infection prevention best practices. Presentations in the morning featured discussion of frequently encountered types of infections in the ALF/NH setting and strategies for prevention as well as an overview of infection prevention requirements and expectations from the licensing agency's perspective. In the afternoon, attendees had two breakout sessions; one session was led by local health department staff and involved how to identify and control a norovirus outbreak while the other breakout consisted of a panel of local ALF/NH staff and administrators discussing their infection prevention challenges and best practices. The trainings helped to reinforce basic infection prevention principles and strengthened the link between ALFs, NHs, and local health department staff (epidemiologists and communicable disease nurses) in their jurisdictions. Participants appreciated the opportunity to interact with a representative from their licensing agency to clarify how to stay in compliance with regulatory requirements.

After the trainings, other educational resources and tools for ALFs and NHs were created as needed. For example, a blood glucose monitoring tool was developed to help measure staff compliance with proper glucose monitoring practices, hand hygiene, and personal protective equipment. Urinary tract infection (UTI) prevention emerged as a common theme during the training breakout sessions, and in response, a prevention collaborative was formed in 12

nursing homes in the Eastern region of the state. Part of the collaborative involved the compilation of best practices for prevention and the creation and dissemination of a toolkit of resources focused on UTI assessment, surveillance, and prevention. All resources from both the general infection prevention toolkit and the UTI toolkit are available on the VDH HAI website (http://www.vdh.virginia.gov/epidemiology/surveillance/hai/).

Limitations

There are a few limitations to consider when interpreting the results of the needs assessment. The response rates of 11% for assisted living facilities and 34% for nursing homes limited the ability to generalize about the experience of all Virginia facilities in these settings, but afforded a deep glimpse into the infection prevention educational needs and challenges in ALFs and NHs, creating an opportunity for the VDH HAI Program to develop a training curriculum and resources to address those needs.

The survey's length and/or format may have inhibited ALFs and NHs with restricted electronic access from completing the questionnaire. Thirty of the 561 ALFs did not have an e-mail address and could not be reached by the initial e-mail invitation to participate in the needs assessment. Thus, the responses may be biased toward facilities with greater technical capacities because the assessment was primarily administered electronically.

Two responding facilities noted that they did not have a POC for infection prevention and approximately 15% of respondents indicated that they were not the POC, which may have introduced bias because the survey was designed to be answered by the person most knowledgeable about the facility's infection prevention activities, challenges, and educational needs.

Lastly, because assessments were not completed face-to-face, allowing the respondent the opportunity to ask for clarification about terms on the assessment, it is possible that some of the questions may have been misinterpreted or answered incorrectly. However, to reduce the potential for misinterpretation, the assessment was piloted in eight facilities and the survey was accompanied by a glossary of terms for reference. In addition, respondents were encouraged to contact the VDH HAI Program with questions.

Conclusions

Infection prevention is an issue across the continuum of care. Environmental factors as well as host factors such as a resident's physical condition, psychological condition, or medical devices/treatments can put ALF and NH residents, especially those who are elderly, at risk for infection. Although there currently are no standardized requirements for HAI surveillance in LTCFs, the fact that more than half of the state outbreaks in past years occurred in ALFs and NHs highlights the need for these settings to focus efforts to minimize HAIs and outbreaks. Infection prevention POCs in ALFs and NHs can improve infection prevention programs in their facilities by consistently re-examining infection prevention policies, training facility staff, providing education to residents and visitors, monitoring infection prevention practices of all staff including contract workers, tracking infections, and sharing HAI outcome measurements with staff to affect change.

The needs assessment helped identify areas for the VDH HAI Program to address through infection prevention trainings and educational resources. Many materials are now available online for all interested providers and consumers free of charge and in an editable format to permit customization. The in-services, fact sheets, surveillance logs, and templates are designed to supplement the growing number of LTC infection prevention resources that can be used to bolster existing educational programs.

The local health department has been and continues to be a primary support and contact for infection prevention in NHs and ALFs. In addition to being involved in any outbreaks, the local health department may be able to assist with infection prevention questions, trainings, and issues when transferring residents across the continuum of care. Even before a problem occurs in the facility, ALFs and NHs and the local health department epidemiologist and/or communicable disease nurse should establish a relationship. In addition, the VDH HAI Program will continue to support facilities across the continuum of care by updating its website to include current recommendations, VDH HAI webinars, and newly developed VDH HAI resources.

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